

Figure 1

1.1 $P = f \{ C, Y, T \}$ where C, Y, and T are variables endogenous to the security

P = Market Price

C = Cash Receipts, periodic coupon, dividend or premium payments

Y = Yield, a single term relating security's return, relative to P, C, T

T = Time, a terminal or continuous measure of the life of the security.

Figure 2

$$1.2 \text{ Yield } M = \frac{\sum (\text{Maturity} \times \text{Portfolio Coefficient} \times \text{YTM}), \text{ for all issues}}{\sum (\text{Maturity} \times \text{Portfolio Coefficient}), \text{ for all issues}}$$

where Yield M = Governing Yield = Y

Maturity = Time = Maturity in Years

Portfolio Coefficient = Present Value, per issue/Present Value, Σ issues

Present Value = Accrued Interest + (best bid Price \times Face Value)

YTM = Yield-To-Maturity, a means providing yield respective time.

Figure 3

$$1.2d \text{ Yield } Md = \frac{\sum (\text{Duration} \times \text{Portfolio Coefficient} \times \text{YTM}), \text{ for all issues}}{\sum (\text{Duration} \times \text{Portfolio Coefficient}), \text{ for all issues}}$$

Figure 4

(Duration, modified annualized)

$$1.3 K = \frac{-C}{Y^2} (1 - (1 + Y/2)^{-2T}) + \frac{C}{Y} (T + TY/2)^{-2T-1} - (T + TY/2)^{-2T-1}$$

$$1.3w K = \frac{-C}{Y^2} + \frac{C}{Y^2} (1 + Y/2)^{-2T} - (1 - C/Y)(T + TY/2)^{-2T-1}$$

Figure 5

$$1.4 V = \frac{2C}{Y^3} - \frac{2C}{(1+Y/2)^{2T}} - \frac{CT}{Y^2} - \frac{C}{(1+Y/2)^{2T+1}} - \frac{C}{(T+TY/2)^{2T+1}} + \frac{(1+C/Y)(T^2+T/2)}{(T+TY/2)^{2T+2}}$$

Figure 6

1.5 Portfolio Coefficient, for each Issue = Present Value^I/Present Value^P;

where 1.5a Present Value^I = (AI + (Bid Price × Face Value)), for each Issue;

1.5b Present Value^P = \sum (AI + (Bid Price × Face Value)), for all Issues.

Figure 7

1.6a Present Value^P = \sum (AI + (Bid Price × Face Value)), for all Issues;

1.6b Accrued Interest^P = \sum Accrued Interest, AI, for all Issues;

1.6c Face Value^P = \sum Face Value, for all Issues;

1.6d Implied Price^P = (Present Value^P - AI^P) / \sum Face Value, for all Issues.

Figure 8

1.7a C^P = Cash Flow^P = \sum C × Portfolio Coefficient, for all Issues;

1.7b T^P = Time^P = \sum Maturity × Portfolio Coefficient, for all Issues;

1.7c Y^P = Yield^P = \sum Yield × Portfolio Coefficient, for all Issues.

Figure 9

1.8a C^P = Coupon^P = \sum Coupon × Portfolio Coefficient, for all Issues;

1.8b T^P = Maturity^P = \sum Maturity × Portfolio Coefficient, for all Issues;

1.8c Y^P = Yield^P = \sum Yield × Portfolio Coefficient, for all Issues.

Figure 10

1.9a Duration^P = \sum Duration × Portfolio Coefficient, for all Issues;

1.9b Convexity^P = \sum Convexity × Portfolio Coefficient, for all Issues.

Figure 11

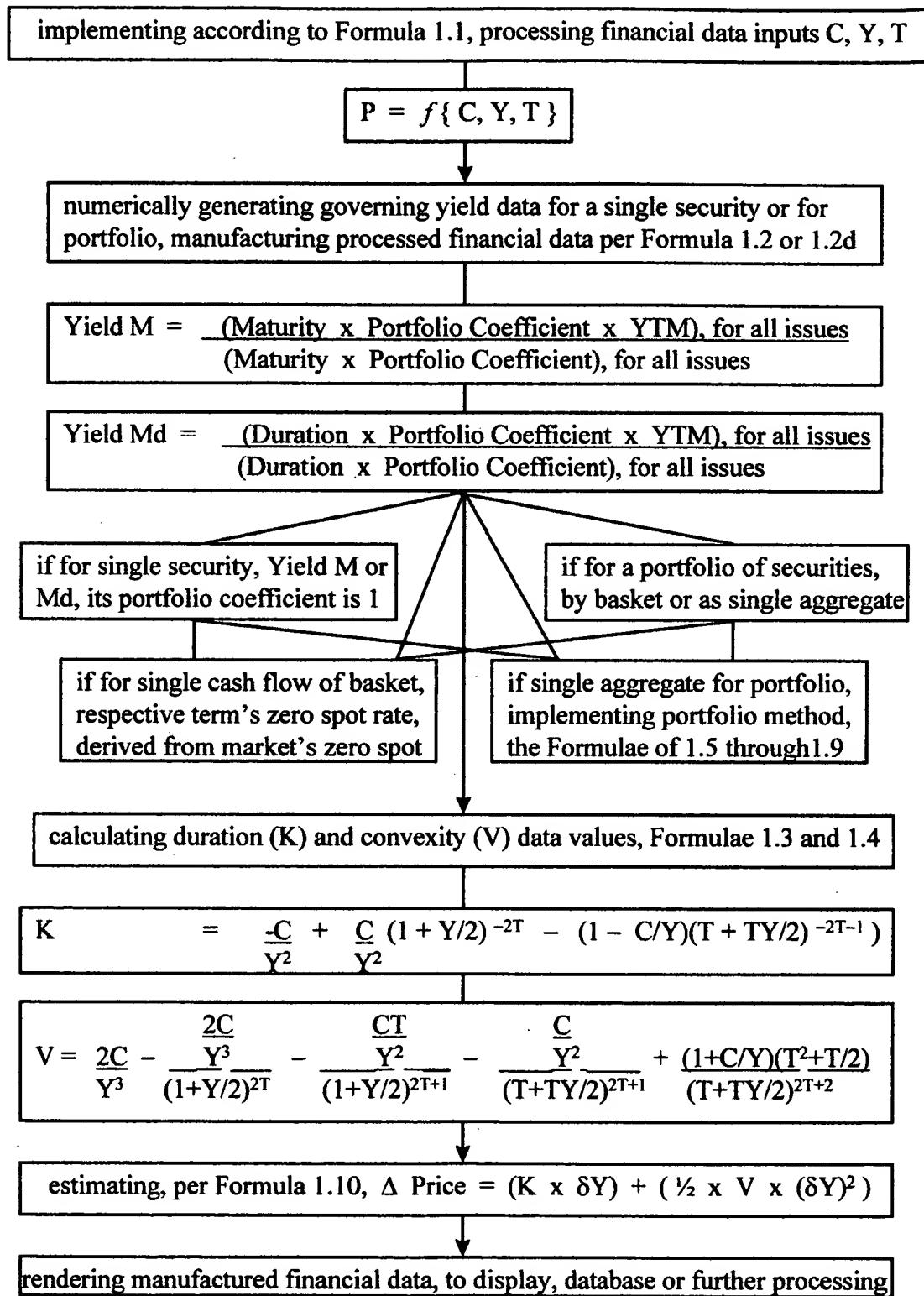


Figure 12

utilizing data values for each issue's endogenous variables of C, Y, T, per Formula 1.1;
 utilizing data values for each issue's exogenous variable of Price, incl. Accrued Interest:

$$P = f\{ C, Y, T \}$$

generating the portfolio coefficient for each issue in portfolio, per Formula 1.5, 1.5a, 1.5b:

Portfolio Coefficient, for each Issue = Present Value^I/Present Value^P;
 Present Value^I = (AI + (Bid Price x FaceValue)), for each Issue;
 Present Value^P = Σ (AI+(Bid Price x Face Value), for all Issues

generating aggregate portfolio (P) data relating portfolio, per Formulae 1.6 thru 1.9:

Present Value^P = Σ (AI + (Bid Price x Face Value), for all Issues;
 Accrued Interest^P = Σ Accrued Interest, AI, for all Issues;
 Face Value^P = Σ Face Value, for all Issues;
 Implied Price^P = (Present Value^P - AI^P)/ Σ Face Value for all Issues

C^P = Cash Flow^P = Σ C x Portfolio Coefficient, for all Issues;
 T^P = Time^P = Σ Maturity x Portfolio Coefficient, for all Issues;
 Y^P = Yield^P = Σ Yield x Portfolio Coefficient, for all Issues

Duration^P = Σ Duration x Portfolio Coefficient, for all Issues;
 Convexity^P = Σ Convexity x Portfolio Coefficient, for all Issues;
 or, determining, using C^P, Y^P, T^P:
 Duration, performing S.3 or 1.3, respective S.1 or S.2;
 Convexity, performing S.4 or 1.4, respective S.1 or S.2

establishing Yield M, means performing processing Formulae 1.2, on portfolio Basis:

$$\text{Yield M} = \frac{(\text{Maturity} \times \text{Portfolio Coefficient} \times \text{YTM}), \text{ for all issues}}{(\text{Maturity} \times \text{Portfolio Coefficient}), \text{ for all issues}}$$

$$\text{Yield Md} = \frac{(\text{Duration} \times \text{Portfolio Coefficient} \times \text{YTM}), \text{ for all issues}}{(\text{Duration} \times \text{Portfolio Coefficient}), \text{ for all issues}}$$

Figure 13

Portfolio of	U.S. Treas.Notes	3/22/96 -4/25/96	three data points	3/22, 4/3, 4/25
Issue	1)	2)	3)	4)
Maturity	11/96	5/97	10/97	8/98
Coupon	4.3875%	6.125%	5.75%	5.875%
Matur, yrs fr. 3/22	0.647541	1.14481	1.56438	2.40274
Matur, yrs fr. 4/3	0.614754	1.11475	1.53160	2.36995
Matur, yrs fr. 4/25	0.505464	1.05464	1.46995	2.30601
Ask Yield, 3/22	5.23%	5.58%	5.60%	5.79%
Ask Yield, 4/3	5.34%	5.53%	5.63%	5.85%
Ask Yield, 4/25	5.26%	5.59%	5.75%	5.98%
Price 3/22	99:12	100:19	100:03	100:04
Price 4/3	99:13	100:19	100:01	100:00
Price 4/25	99:14	100:16	99:28	99:20
Face Value	\$70,000,000	\$100,000,000	\$40,000,000	\$120,000,000
AI, 3/22	\$1,082,490	- 0 -	\$999,180	\$693,443
AI, 4/3	\$1,193,186	\$217,555	\$1,074,590	\$924,590
AI, 4/25	\$1,367,797	\$585,724	\$1,219,126	\$1,367,623
Full Value 3/22	\$70,644,990	\$100,593,750	\$41,036,680	\$120,843,443
Full Value 4/3	\$70,767,561	\$1000,811,305	\$41,012,090	\$120,924,590
Full Value 4/25	\$70,974,047	\$101,085,724	\$41,169,126	\$120,917,623
	5)	6)	7)	
Maturity	3/99	6/00	2/01	
Coupon	5.875%	5.875%	5.625%	
Matur, yrs fr. 3/22	2.98082	4.23288	4.90274	
Matur, yrs fr. 4/3	2.94804	4.20009	4.86995	
Matur, yrs fr. 4/25	2.88524	4.13661	4.80601	
Ask Yield, 3/22	5.87%	6.04%	6.03%	
Ask Yield, 4/3	5.90%	6.04%	6.04%	
Ask Yield, 4/25	6.07%	6.25%	6.28%	
Price 3/22	99:30	99:10	98:07	
Price 4/3	99:28	99:11	98:07	
Price 4/25	99:11	98:16	97:05	
Face Value	\$40,000,000	\$80,000,000	\$60,000,000	
AI, 3/22	\$44,945	\$1,258,470	\$331,967	
AI, 4/3	\$121,995	\$1,412,568	\$442,623	
AI, 4/25	\$269,672	\$1,707,923	\$654,713	
Full Value 3/22	\$40,019,945	\$80,708,470	\$59,263,217	
Full Value 4/3	\$40,071,995	\$80,887,568	\$59,373,873	
Full Value 4/25	\$40,007,172	\$80,507,923	\$58,948,463	

Figure 14

Portfolio Coefficient, for each Issue = Present Value^I/Present Value^P;
 Present Value^I = (AI + (Bid Price x FaceValue), for each Issue;
 Present Value^P = Σ (AI+(Bid Price x Face Value), for all Issues
 Face Value^P = Σ Face Value, for all Issues;
 Present (Full) Value^P = Σ (AI + (Bid Price x Face Value), for all Issues;
 Accrued Interest^P = Σ Accrued Interest, AI, for all Issues;
 Implied Price^P = (Present Value^P – AI^P)/ Σ Face Value for all Issues
 C^P = Cash Flow^P = Σ C x Portfolio Coefficient, for all Issues;
 T^P = Time^P = Σ Maturity x Portfolio Coefficient, for all Issues;
 Y^P = Yield^P = Σ Yield x Portfolio Coefficient, for all Issues
 Duration^P = Σ Duration x Portfolio Coefficient, for all Issues;
 Convexity^P = Σ Convexity x Portfolio Coefficient, for all Issues

Figure 15

<u>Aggregate Data Values for Portfolio</u>			
Date	3/22/96	4/3/96	4/25/96
Face Value ^P	\$510,000,000	\$510,000,000	\$510,000,000
Accrued Interest ^P	\$4,749,907	\$5,387,107	\$7,172,578
Present Value ^P	\$513,449,907	\$513,848,982	\$513,610,078
Implied Price ^P	0.99745098	0.99698407	0.99301471
Portfolio Coefficient			
11/96	.1375888	.1377205	.138186
5/97	.1959174	.1961886	.196814
10/97	.0799234	.0798135	.196814
8/98	.2353559	.235331	.235427
3/99	.0779432	.077984	.077894
6/00	.1572929	.157415	.156749
2/01	.1159784	.115547	.114773
Coupon ^P	5.680331%	5.680322%	5.667059%
Maturity ^P	2.470660	2.437096	2.359601
YTM ^P	5.730002%	5.755183%	5.859601%
Duration ^P	2.222031	2.191867	2.130696
Convexity ^P	7.847886	7.695562	7.389558

Figure 16

Date	3/22/96	4/3/96	4/25/96
Maturity ^P (in Years)	2.470660	2.437096	2.359601
Maturity ^P (Future Date)	9/10/98	9/10/98	9/5/98
Zero Spot			
8/98	5.83%	5.86%	6.04%
11/98	5.86%	5.90%	6.09%
linear	9/98	5.84%	5.87%
fitted	9/10/98	5.845%	5.875%
Yield M ^P	5.87129004%	5.89269332%	6.0661141%
Yield Md ^P	5.8523%	5.8737%	6.047%
YTM ^P	5.73000157%	5.75518286%	5.8561971%

Figure 17

Time Period	3/22/96 - 4/3/96	4/3/96 - 4/25/96	3/22/96 - 4/25/96
Actual Δ Yield M ^P	0.0002140328	0.0017342077	0.001948241
Actual Δ Yield Md ^P	0.000214	0.001733	0.001947
Actual Δ YTM ^P	0.0002516720	0.0010101424	0.001261814
Duration ^P	2.222031	2.191867	2.222031
Convexity ^P	7.847886	7.695562	7.847886
Computing Duration, Convexity Factorization, S.5:			
Estimated Δ Price ^P , Yield M ^P	-0.0004754078	-0.00378958	-0.004314158
Estimated Δ Price ^P , Yield Md ^P	-0.0004753	-0.00378695	-0.004311419
Estimated Δ Price ^P , YTM ^P	-0.0005589743	-0.00221017	-0.002796069
Actual Δ Price ^P	-0.000466911	-0.003969363	-0.004436274
% Accuracy Yield M ^P	98.2%	95.5%	97.2%
% Accuracy Yield Md ^P	98.2%	95.4%	97.2%
% Accuracy YTM ^P	83.5%	55.7%	63.1%

Figure 18

<u>Duration, K vs. Prior Art</u>			
Date	3/22/96	4/3/96	4/25/96
Coupon ^P	5.680330985%	5.680322119%	5.66705895%
Maturity ^P	2.4706604	2.437096	2.359601
YTM ^P	5.73000157%	5.75518286%	5.8561971%
Price ^P	99.745098	99.698407	99.301471
Duration, determined using above single aggregate C ^P , Y ^P , T ^P values:			
K (1.3)	-2.25389446	-2.21483844	-2.10426651
Prior Art (S.3)	2.09611877	2.07102626	2.01633865

Figure 19

Period	3/22/96 - 4/3/96	4/3/96 - 4/25/96	3/22/96 - 4/25/96
K	-2.25389446	-2.21483844	-2.10426651
Convexity ^P	7.847886	7.695562	7.847886
δY	0.0002071580	0.0017921768	0.001968276
processing estimated Δ Price = (K x δY) + (0.5 x Convexity ^P x (δY) ²):			
Estimated Δ Price	-0.000466744	-0.003957023	-0.004421085
Actual Δ Price	-0.000466911	-0.003969363	-0.004436274
Accuracy %	99.96%	99.69%	99.66%
Error %	0.04%	0.31%	0.34%

Figure 20

<u>Convexity, V vs. Prior Art</u>	3/22/96	4/3/96	4/25/96
Date	3/22/96	4/3/96	4/25/96
Yield M ^P	5.87129004%	5.89269332%	6.0661141%
YTM ^P	5.73000157%	5.75518286%	5.8561971%
Yield M ^P - YTM ^P (bp spread)	0.14128852	0.13751046	0.2099176
Coupon ^P	5.680330985%	5.680322119%	5.66705895%
Maturity ^P	2.4706604	2.437096	2.359601
Price ^P (N/A for V)	99.745098	99.698407	99.301471
process determining Convexity, using above single aggregate C ^P , Y ^P , T ^P values:			
V (1.4c, Yield M ^P)	6.41019700	6.25535943	5.88053355
V (1.4c, YTM ^P)	6.44053175	6.28389014	5.92058762
V (1.4cv, Yield M ^P - YTM ^P)	6.84893917	7.14436415	2.89621154
V (1.4cv, Yield M ^P)	0.00404544	0.00396111	0.00360859
Prior Art (S.4, YTM ^P)	6.05221587	5.91149933	5.60084222
Market Spot Yield	5.845%	5.875%	6.065%
Yield M - Zero Spot	0.026%	0.018%	0.001%

Figure 21

Period	3/22/96 - 4/3/96	4/3/96 - 4/25/96	3/22/96 - 4/25/96
δY	0.0002071580	0.0017921768	0.001968276
K	-2.25389446	-2.21483844	-2.25389446
V (1.4cv, b.p. spread)	6.84893917	7.14436415	6.84893917
V (1.4c, Yield M)	6.41019700	6.25535943	6.41019700
V (1.4cv, Yield M)	0.00404544	0.00396111	0.00404544
processing 1.10, estimated Δ Price = (K x δY) + (0.5 x V x (δY) ²):			
Actual Δ Price	-0.000466911	-0.003969363	-0.004436274
Est. Δ P (V=1.4cv, spread)	-0.000466766	-0.003957909	-0.004423097
Accuracy %	99.97%	99.71%	99.70%
Error %	0.03%	0.29%	0.30%
Est. Δ P (V=1.4c YieldM ^P)	-0.000466775	-0.003959336	-0.004423869
Accuracy %	99.97%	99.75%	99.72%
Error %	0.03%	0.25%	0.28%
Est. Δ P (V=1.4cv YieldM ^P)	-0.000466912	-0.003969376	-0.004436279
Accuracy %	99.99979%	99.99967%	99.99989%
Error %	0.00021%	0.00033%	0.00011%

Figure 22

1.10

$$\text{Estimated } \Delta \text{ Price} = (K \times \delta Y) + (\frac{1}{2} \times V \times (\delta Y)^2)$$

where $\delta Y = \Delta Y = \Delta \text{Yield M}$; approximated Δ zero spot, or $\Delta \text{Price}/K$;
 $K = \text{Duration}$, e.g. Formula 1.3 and $V = \text{Convexity}$, e.g. Formula 1.4.

1.10k

$$\Delta \text{ Price, due to Duration (K)} = K \times \Delta Y$$

1.10v

$$\Delta \text{ Price, due to Convexity (V)} = \frac{1}{2} \times V \times (\Delta Y)^2.$$

Figure 23

1.11

$$\Delta \text{ Price} = (- |\text{Duration}| \times \delta Y) + (\frac{1}{2} \times \text{Convexity} \times (\delta Y)^2)$$

where $\delta Y \cong \Delta Y = \Delta \text{Yield M}$; instantaneous, or across points in time
Duration = Formula 1.3 or S.3 and Convexity = Formula 1.4 or S.4.

Figure 24

utilizing data values for each issue's endogenous variables of C, Y, T, per Formula 1.1;
 utilizing data values for each issue's exogenous variable of Price, incl. Accrued Interest:

$$P = f\{ C, Y, T \}$$

generating the portfolio coefficient for each issue in portfolio, per Formula 1.5, 1.5a, 1.5b:

determining Yield M, means processing Formulae 1.2 or 1.2d, on single portfolio Basis:

$$\text{Yield } M = \frac{(\text{Maturity} \times \text{Portfolio Coefficient} \times \text{YTM}), \text{ for all issues}}{(\text{Maturity} \times \text{Portfolio Coefficient}), \text{ for all issues}}$$

$$\text{Yield } M_d = \frac{(\text{Duration} \times \text{Portfolio Coefficient} \times \text{YTM}), \text{ for all issues}}{(\text{Duration} \times \text{Portfolio Coefficient}), \text{ for all issues}}$$

determining duration and convexity variable data values on singular Basis

prior art values per Formulae S.3, S.4

K and V values, Formulae 1.3, 1.4

$$\text{estimating } \Delta \text{ Price} = (-|\text{Duration}| \times \delta Y) + (\frac{1}{2} \times \text{Convexity} \times (\delta Y)^2)$$

by factorization, Formulae S.5

by factorization, Formulae 1.10

if over two distinct points in time, Δ Price twixt endpoints, determine $\delta Y = \Delta Y$

$$\Delta Y = \Delta \text{ Yield M, of end Yield M - start YieldM, using value of Duration and Convexity at start point}$$

rendering manufactured financial data, to display, database or further processing

Figure 25A

S.2c semi-annual $P = PR = ((C/Y)*(1-(1+(Y/2))^{(-2*T)})+(1+(Y/2))^{(-2*T)})$
where C, Y and P are decimal values, T=Maturity in years

S.2cn generalized $P = PRBOND = ((C/Y)*(1-(1+(Y/N))^{(-N*T)})+(1+(Y/N))^{(-N*T)})$
where N=n= periodic C per annum, e.g. semi-annual=2, T=Maturity in years

Figure 25B

S.3c semi-annual Durmodan=DURMOD=(((C/2)/((Y/2)^2))*(1-(1/((1+(Y/2))^(2*T))))
+((2*T*(100-((C/2)/(Y/2))))/((1+(Y/2))^{((2*T)+1)}))/((2^P))
where T = Maturity in years; P = Price (of 100)

S.3cn generalized Durmodan=DURMD= (((C/N)/((Y/N)^2))*(1-(1/((1+(Y/N))^(N*T))))
+((N*T)*(100-((C/N)/(Y/N))))/((1+(Y/N))^{(N*T)+1}))/((2^P))
where N=n= cash receipts per annum, e.g. semi-annual=2; T=Maturity in years

Figure 25C

S.4c semi-annual Convex = CON = (((C/((Y/2)^3))*(1-(1/((1+(Y/2))^(2*T))))
-((C*(2*T))/((Y/2)^2)*((1+(Y/2))^{(2*T)+1})))
+((2*T)*((2*T)+1)*(100-(C/Y)))/((1+(Y/2))^{((2*T)+2)}))/((4^P))
where T = Maturity in years; P = Price (of 100)

S.4cn generalized Convex = CONDP = (((C/((Y/N)^3))*(1-(1/((1+(Y/N))^(N*T))))
-((C*(N*T))/((Y/N)^2)*((1+(Y/N))^{(N*T)+1})))
+((N*T)*((N*T)+1)*(100-(C/Y)))/((1+(Y/N))^{(N*T)+2}))/((4^P))
where N=n= # cash receipts per annum, e.g. semi-annual=2; T=Maturity in years

Figure 25D

S.5c generalized DeltaP = DP = - (Durmodan)*(CHY) + (0.5*Convexity*(CHY^2))

where CHY(discrete)= $\Delta Y = (Y_1 - Y_0)$, $Y_0=Y$ at start, $Y_1=Y$ at second point in time
where CHY(continuous)= $\delta Y = (Y_1 - Y_0)$, $Y_0=Y$ at start, $Y_1=Y$ at second ($Y_1 \neq Y_0$) level
and where DeltaP = -abs(Duration S.3cn)*(CHY)+(0.5*(ConvexityS.4cn)*(CHY^2))

Figure 26A

$$1.2 \quad \text{Yield } M = YM = \frac{\left(\sum \{ (\text{Maturity} * \text{Portfolio Coefficient} * YTM)_1, (M * PC * YTM)_{2, \dots} \} \right)}{\left(\sum \{ (\text{Maturity} * \text{Portfolio Coefficient})_1, (M * PC)_{2, \dots} \} \right)}$$

$$1.2d \quad \text{Yield } Md = YMD = \frac{\left(\sum \{ (\text{Duration} * PC * YTM)_1, (D * PC * YTM)_{2, \dots} \} \right)}{\left(\sum \{ (\text{Duration} * \text{Portfolio Coefficient})_1, (D * PC)_{2, \dots} \} \right)}$$

Figure 26B

$$\begin{aligned} 1.3cw \quad K &= DPDY = \\ \text{semi-annual} & \quad (((-C/(Y^2)) * (1 - ((1 + (.5 * Y))^{(-2 * T)}))) \\ & \quad + ((C/Y) * ((T + (.5 * Y * T))^{(-2 * T) - 1})) \\ & \quad - ((T + (.5 * Y * T))^{(-2 * T) - 1})) \end{aligned}$$

where C and Y are decimal values, T=Maturity in years

$$\begin{aligned} 1.3cn \quad K &= BONK = \\ \text{generalized} & \quad (((-C/(Y^2)) * (1 - ((1 + (Y/N))^{(-N * T)}))) \\ & \quad + (((C/Y) - 1) * T * ((1 + (Y/N))^{(-N * T) - 1}))) \end{aligned}$$

where N=n= # cash receipts per annum, e.g. semi-annual=2; T=Maturity in years
and where BONK and DPDY not returning exact identical values for N=n=2

Figure 26C

$$\begin{aligned} 1.4cn \quad V &= BONV = \\ \text{generalized} & \quad (((2 * C)/(Y^3)) * (1 - (Y/N)^{(-N * T)})) \\ & \quad - ((C/Y^2) * (2 * T) * ((1 + (Y/N))^{(-N * T) - 1})) \\ & \quad - (((C/Y) - 1) * ((N * T) + 1) * (T/N) * ((1 + (Y/N))^{(-N * T) - 2})) \end{aligned}$$

where N=n= # cash receipts per annum, e.g. semi-annual=2; T=Maturity in years

$$\begin{aligned} 1.4cv \quad V &= VEXA = \\ \text{spread-based, semi-annual} & \quad (((2 * C)/(Y^3)) - (((2 * C)/(Y^3)) * ((1 + (Y/2))^{(-2 * T)})) \\ & \quad - ((C/T) * (Y^2) * ((1 + (Y/2))^{(-2 * T) - 1})) \\ & \quad - ((C/(Y^2)) * ((T + (T * (Y/2)))^{(-2 * T) - 1})) \\ & \quad + ((1 + (C/Y)) * ((T^2) + (T/2)) * ((T + (T * (Y/2)))^{(-2 * T) - 2})) / 10000 \end{aligned}$$

where e.g. Y=YieldM-YTM, Y expressed in decimal, i.e. if Y=0.14%=0.14

$$\begin{aligned} 1.4cvn \quad V &= VEX = \\ \text{spread-based, generalized} & \quad (((2 * C)/(Y^3)) - (((2 * C)/(Y^3)) * ((1 + (Y/N))^{(-N * T)})) \\ & \quad - ((C/T) * (Y^2) * ((1 + (Y/N))^{(-N * T) - 1})) \\ & \quad - ((C/(Y^2)) * ((T + (T * (Y/N)))^{(-N * T) - 1})) \\ & \quad + ((1 + (C/Y)) * ((T^2) + (T/N)) * ((T + (T * (Y/N)))^{(-N * T) - 2})) / 10000 \end{aligned}$$

where e.g. Y = Yield M, Y expressed in decimal, i.e. if Y = 6.06% = 0.606

Figure 26D

$$1.10c \quad \text{generalized} \quad \Delta P = \text{DELTAP} = K * (\text{CHY}) + (0.5 * V * (\text{CHY}^2))$$

and where $\Delta P = \text{DELTAP} = -\text{abs}(\text{Duration}1.3n) * (\text{CHY}) + (0.5 * (\text{Convexity}1.4cvn) * (\text{CHY}^2))$

Figure 26E

$$1.11 \quad \text{universal} \quad \Delta P = DP = -\text{abs}(\text{Duration}) * (\text{CHY}) + (0.5 * (\text{Convexity}) * (\text{CHY}^2))$$

Figure 27

1.111

$$\Delta P = A + B + C + D$$

where,

ΔP = change in bid price, for given changes in yield and time

A = -abs(Duration) × Price(dirty) × ΔY

B = $\frac{1}{2} \times$ Convexity × Price(dirty) × $(\Delta Y)^2$

C = Theta × Price(dirty) × Δt

D = -(Δ Accrued Interest, for given Δt),

wherein,

Y (YTM), computed on applicable day-count basis, by Formula S.1 or Formula S.2

Duration and Convexity, standard modified annualized, Formulae S.3 or 1.3, and S.4 or 1.4

Theta (θ) recalculated at cash flow dates, such a theta: $\theta = 2 \ln(1+r/2)$, r = ytm

Price (dirty) equals bid price plus accumulated interest

Δt is the elapsed time between two points in time on which the estimations are made

ΔP rounded to nearest pricing gradient per market price convention, ΔP occurring Δt .

Figure 28

1.112

$$\Delta P_p = A_p + B_p + C_p + D_p$$

wherein,

p is on a portfolio basis, each security having a portfolio coefficient based on its portion of the present value, with Aggregate Value Calculations for Portfolio implemented, such a (P), establishing the Aggregate Values for Portfolio, comprising the identified process variables.

Figure 29

Figure 30

Portfolio 1											Date		
											3/22/96		
Security	T.-Note	Maturity	Yrs.toMat.	Coupon	N	YTM S.2	Dura.1.3	Conv.1.4	Bid Price	FaceValue	Acc.Intrst.	Full Value	Portf.Coeff.
1)	11/15/96	0.652055	0.043875	2	0.054254	-0.62859	0.70427	0.993438	100	1.52661	100.8704	0.142458	
2)	5/31/97	1.191781	0.06125	2	0.05603	-1.14238	1.866949	1.005938	100	1.887842	102.4816	0.144733	
3)	10/31/97	1.810959	0.0575	2	0.058324	-1.51533	3.075528	0.99875	100	2.236986	102.112	0.144211	
4)	8/15/98	2.4	0.05875	2	0.058184	-2.21188	6.118934	1.00125	100	0.5875	100.7125	0.142235	
5)	3/31/99	3.024658	0.05875	2	0.058979	-2.73254	9.127492	0.999375	100	2.792637	102.7301	0.145084	
6)	6/30/00	4.276712	0.05875	2	0.060599	-3.70301	16.54068	0.993125	100	1.311815	100.6243	0.14211	
7)	2/28/01	4.942466	0.05625	2	0.060473	-4.17283	21.13105	0.982188	100	0.32363	98.54238	0.13917	
Portfolio		2.573496	0.056465	2	0.05811	-2.29144	8.30004	0.996295	700	10.66702	708.0733	1	
Yield M=		0.059228											
Yield Md=		0.059161											
Portfolio 1											Date		
											4/3/96		
Security	T.-Note	Maturity	Yrs.toMat.	Coupon	N	YTM S.2	Dura.1.3	Conv.1.4	Bid Price	FaceValue	Acc.Intrst.	Full Value	Portf.Coeff.
1)	11/15/96	0.619178	0.043875	2	0.054276	-0.59751	0.650485	0.99375	100	1.670856	101.0459	0.143068	
2)	5/31/97	1.158904	0.06125	2	0.055887	-1.11203	1.782746	1.005938	100	2.088212	102.683	0.145386	
3)	10/31/97	1.578082	0.0575	2	0.058551	-1.48514	2.967897	0.998438	100	2.426027	102.2698	0.144801	
4)	8/15/98	2.367123	0.05875	2	0.05875	-2.1802	5.963126	1	100	0.780651	100.7807	0.142692	
5)	3/31/99	2.991781	0.05875	2	0.059212	-2.70327	8.947306	0.99875	100	0.048288	99.92329	0.141479	
6)	6/30/00	4.243836	0.05875	2	0.060527	-3.67928	16.32761	0.993438	100	1.504966	100.8487	0.142789	
7)	2/28/01	4.909589	0.05625	2	0.060498	-4.14867	20.88824	0.982188	100	0.508562	98.72731	0.139785	
Portfolio		2.538885	0.056455	2	0.058228	-2.26104	8.150018	0.996071	700	9.028562	706.2786	1	
Yield M=		0.059359											
Yield Md=		0.059296											
Portfolio 1											Change in Price		
											from 3/22/96 to 4/3/96		
Security	A	B	C	D	dP (of 100 par)								
T.-Note	Dura. 1.3	Conv.1.4	Theta	ΔYTM	dDuration	dConvex	dTheta	dAccnt	dBid Price	RounddP	Actual	ΔP	Arb.Differ.
1)	-0.62859	0.70427	0.053531	2.16E-05	-0.00137	1.66E-08	0.177528	-0.14425	0.031907	0.03125	0.03125	0.000657	
2)	-1.14187	1.865863	0.05526	-0.00014	0.016745	1.98E-08	0.188185	-0.20137	0.001561	0	0	0.001561	
3)	-1.51851	3.083538	0.05749	0.000226	-0.03511	8.07E-08	0.193	-0.18904	-0.03114	0	-0.03125	0.000106	
4)	-2.21015	6.113276	0.057354	0.000566	-0.12589	9.85E-05	0.189905	-0.19315	-0.12904	-0.125	-0.125	-0.00404	
5)	-2.7315	9.123469	0.058126	0.000233	-0.0655	2.55E-05	0.198316	-0.17705	-0.04821	-0.0625	-0.0625	0.016289	
6)	-3.70022	16.52665	0.059699	-7.2E-05	0.026929	4.35E-06	0.197496	-0.19315	0.031279	0.03125	0.03125	2.9E-05	
7)	-4.16808	21.10424	0.059577	2.47E-05	-0.01015	6.35E-07	0.193014	-0.18493	-0.00208	0	0	-0.00208	
Portfolio	-2.29036	8.293923	0.057281	0.000122	-0.02783	1.99E-05	0.190491	-0.1833	-0.02062			-0.02246	0.001841
Δ Yield M=		0.000131			-0.03317	7.89E-06	0.20771	-0.1833	-0.00876			-0.02246	0.013704
Δ Yield Md=		0.000136			-0.03429	8.43E-06	0.20771	-0.1833	-0.00988			-0.02246	0.012586
Sort by Arbitrage Differential											Portfolio 1		
Security	dBid Price	RounddP	Actual	ΔP	Arb.Differ.	Portfolio YTM, Yield M and Md							
5)	-0.04621	-0.0625	-0.0625	0.016289		T.-Note dBid Price Actual ΔP Arb.Differ.							
2)	0.001561	0	0	0.001561		Portfolio -0.02062 -0.02248 0.001841							
1)	0.031907	0.03125	0.03125	0.000657		Yield M -0.00876 -0.02246 0.013704							
3)	-0.03114	0	-0.03125	0.000106		Yield Md -0.00988 -0.02246 0.012588							
6)	0.031279	0.03125	0.03125	2.9E-05									
7)	-0.00206	0	0	-0.00206									
4)	-0.12904	-0.125	-0.125	-0.00404									

Figure 31

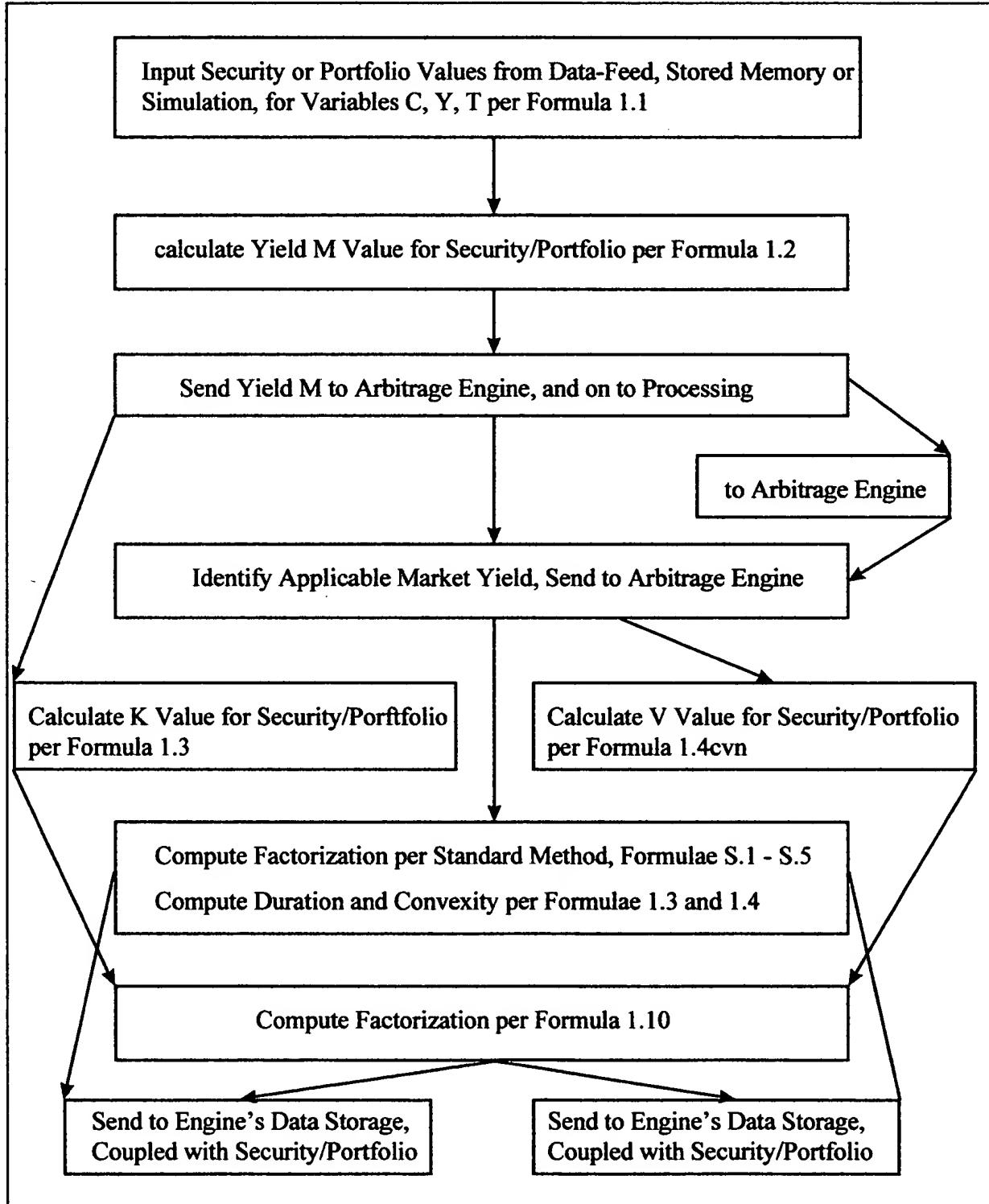


Figure 32

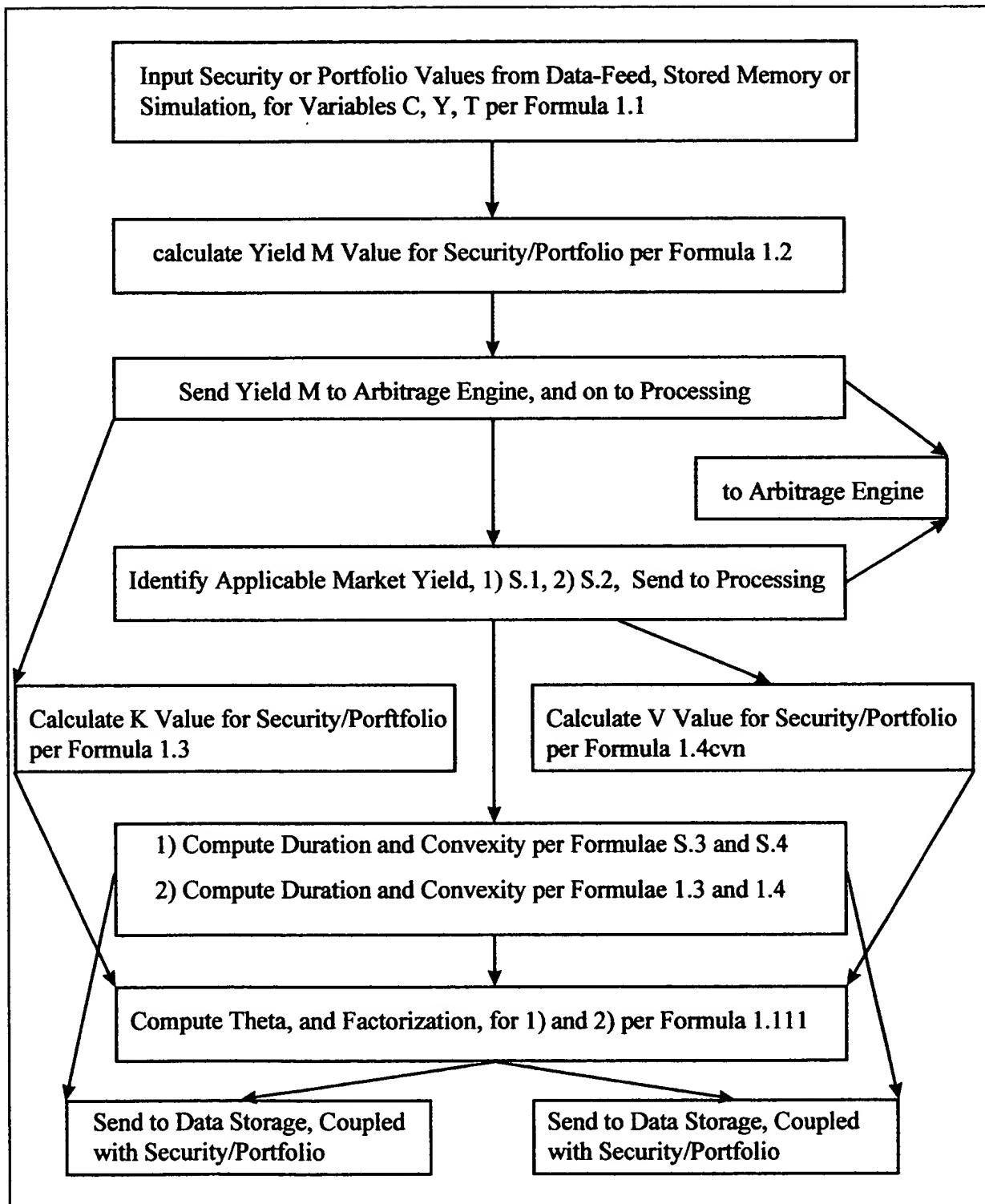


Figure 33

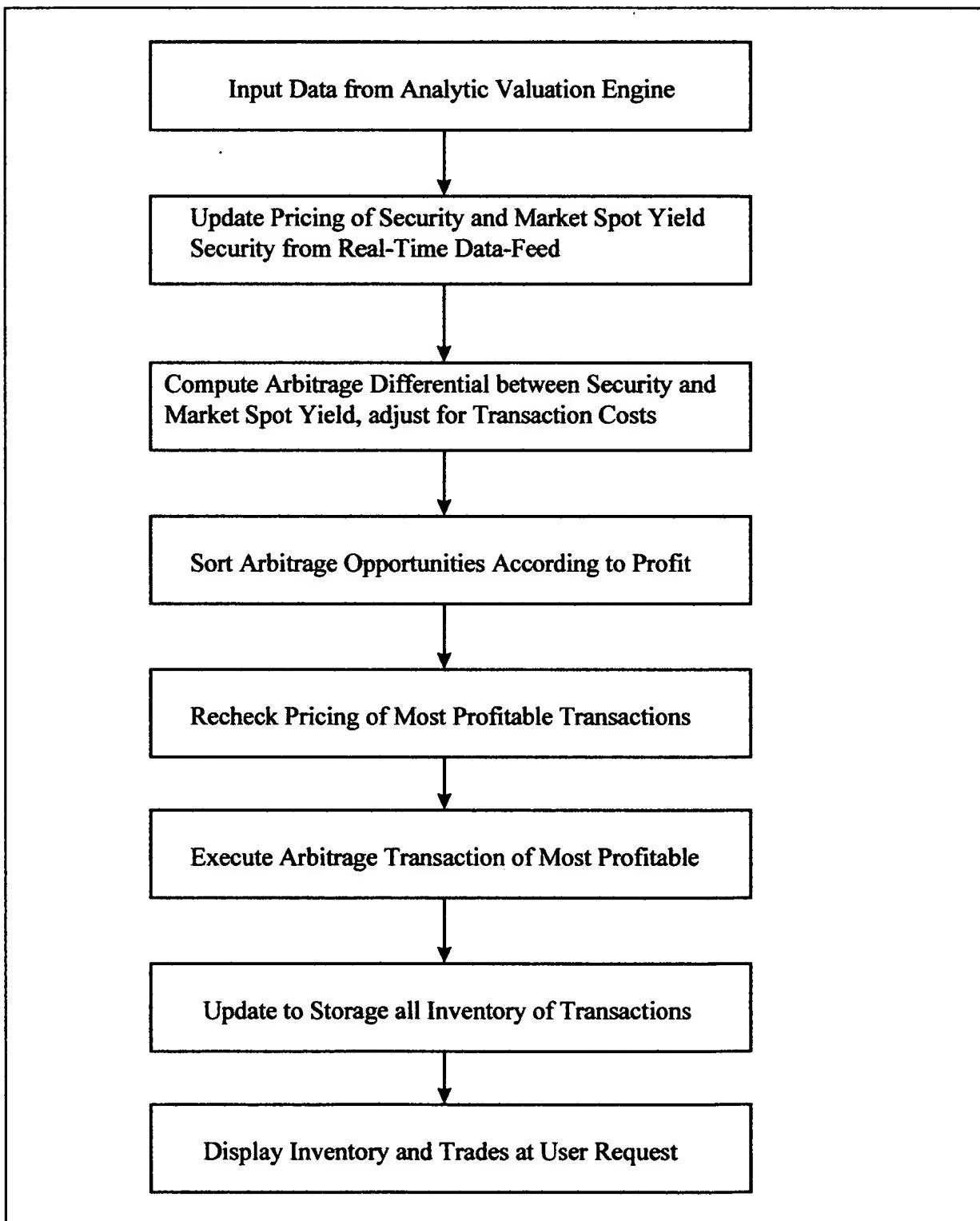


Figure 34

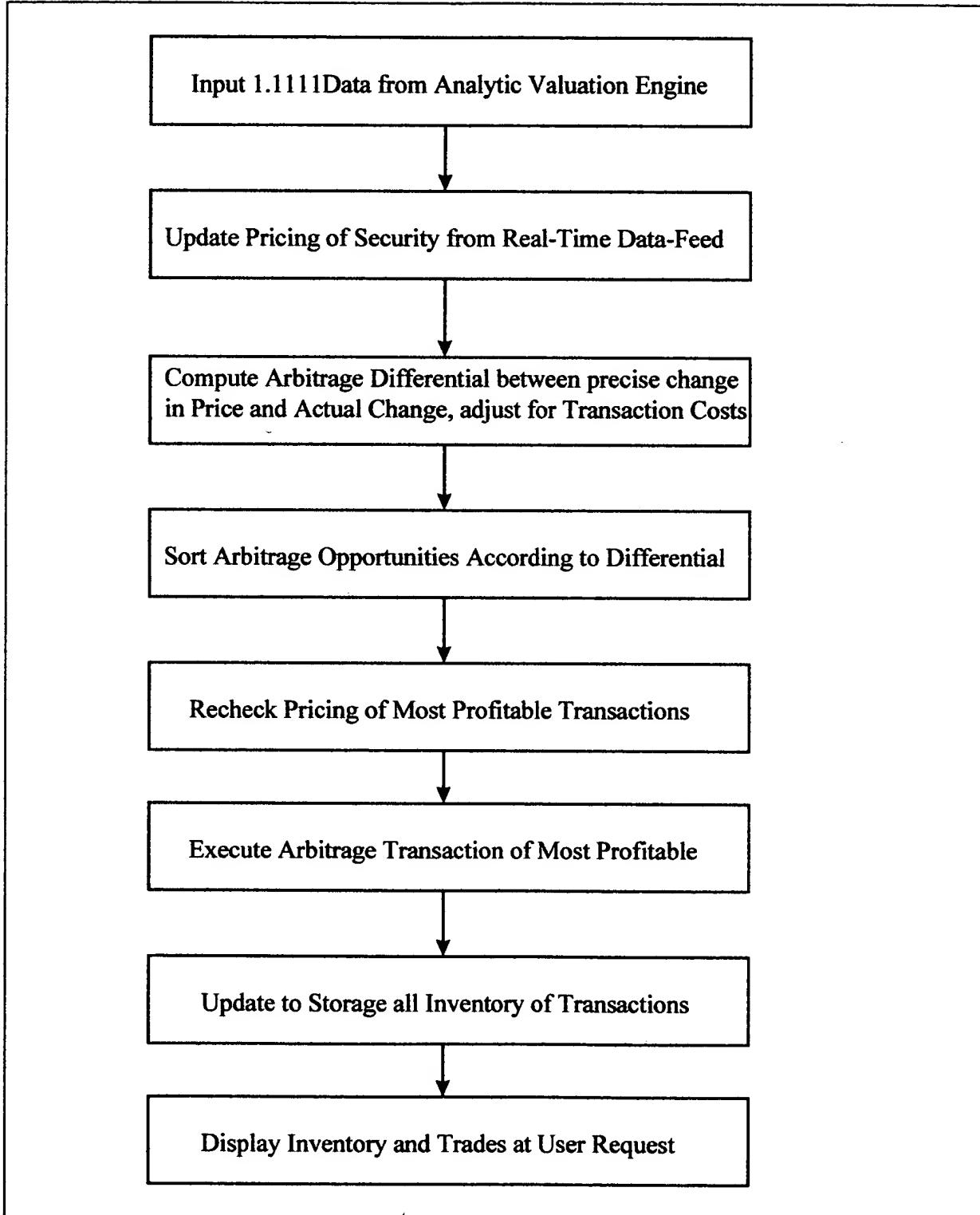


Figure 35

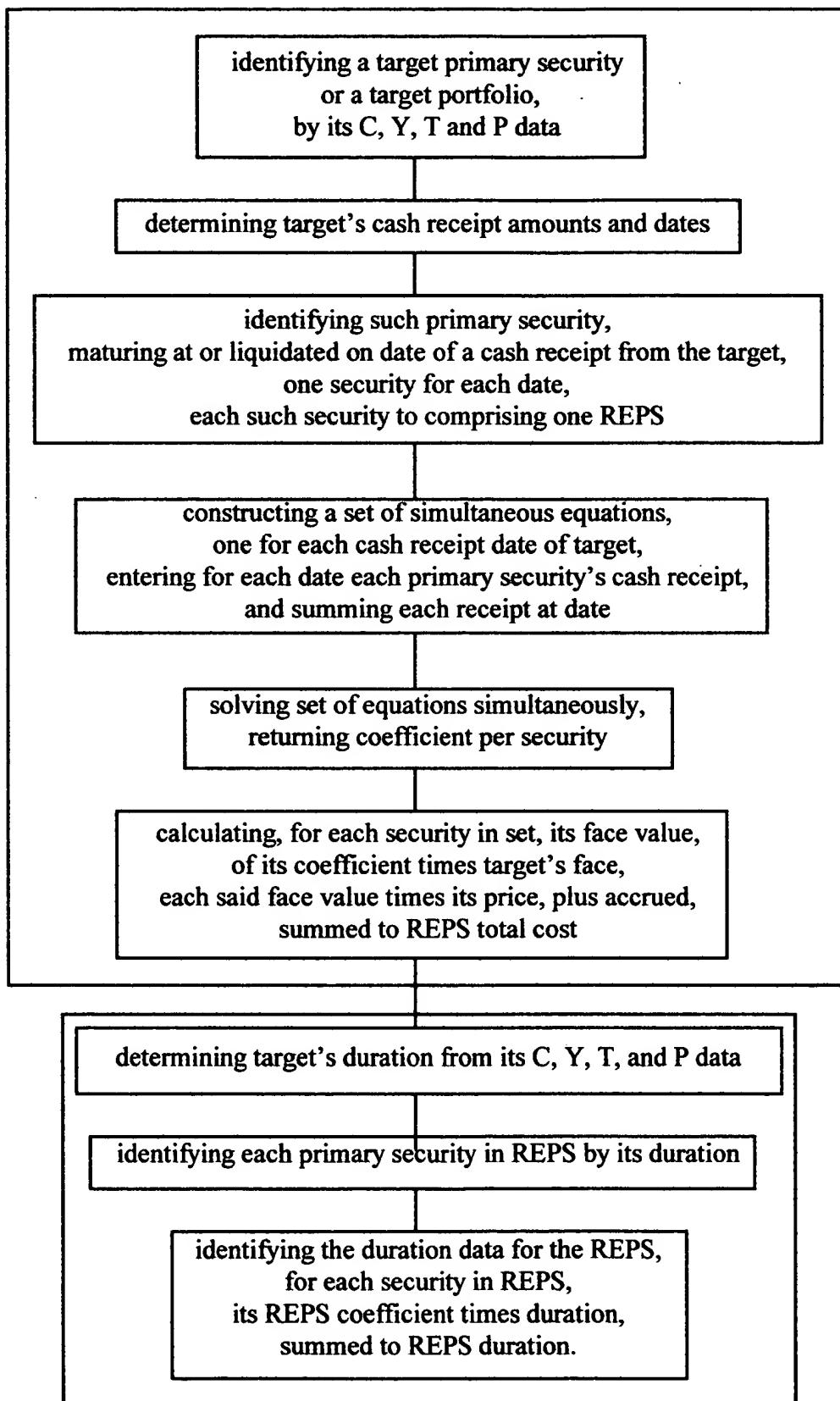


Figure 36

Replicant A: Replicated Equivalent Primary Security (using intermediate T-Notes)

	1)	2)	3)
Maturity:	5/96	11/96	5/97
Matur, yrs. fr. 4/3/96	.114754	.614754	1.114754
Coupon:	7.375%	7.25%	8.50%
Cheapest Ask Yield:	4.46%	5.28%	5.48%
Bid Prices:	100:07; same	101:03; same	103:04; same
Ask Prices:	100:09; :10	101:05; :06	103:06; :07
Repl. Coefficient:	-0.8895348	-0.9222442	-0.95576775
Face Value:	(\$444,767)	(\$461,121)	(\$477,887)
Best Price:	(\$445,740)	(\$446,165)	(\$492,821)
Accrued Interest:	(\$12,636)	(\$12,968)	(\$15,649)
Total Cost (P+AI):	(\$458,376)	(\$479,133)	(\$508,470)
Duration (mod. ann.):	(0.113957)	(0.597015)	(1.059356)
Convexity (mod. ann.)	(0.068846)	(0.647529)	(1.651005)
	4)	5)	6)
Maturity:	11/97	5/98	11/98
Matur, yrs. fr. 4/3/96	1.614754	2.114754	2.614754
Coupon:	8.875%	9.00%	8.875%
Cheapest Ask Yield:	5.71%	5.78%	5.85%
Bid Prices:	104:23; same	106:07; same	107:03; :02
Ask Prices:	104:25; :27	106:09; :11	107:03; :06
Repl. Coefficient:	-0.9963879	-1.0406026	-1.0874297
Face Value:	(\$498,193)	(\$520,302)	(\$543,715)
Best Price:	(\$521,702)	(\$552,658)	(\$582,285)
Accrued Interest:	(\$17,034)	(\$18,040)	(\$18,590)
Total Cost (P+AI):	(\$538,736)	(\$570,698)	(\$600,875)
Duration (mod. ann.):	(1.500120)	(1.923568)	(2.334071)
Convexity (mod. ann.)	(3.035738)	(4.776208)	(6.855101)
	7)		
Maturity:	5/99		
Matur, yrs. fr. 4/3/96	3.114754		
Coupon:	9.125%		
Cheapest Ask Yield:	5.94%		
Bid Prices:	108:27; :26		
Ask Prices:	108:29; :30		
Repl. Coefficient:	98.864316		
Face Value:	\$49,460,543		
Best Price:	\$53,834,709		
Accrued Interest:	\$1,737,723		
Total Cost (P+AI):	\$55,572,432		
Duration (mod. ann.):	2.718305		
Convexity (mod. ann.)	9.188165		
Values for Replicant A:			
Total Cost:	\$52,416,144		
Duration:	2.610444		

Figure 37

Replicant B: Replicated Equivalent Primary Security (using zero-coupon STRIPS)

	1)	2)	3)
Maturity:	5/96	11/96	5/97
Matur, yrs. fr. 4/3/96	.114754	.614754	1.114754
Coupon:	None	None	None
Yield:	5.20%	5.31%	5.55%
Bid Prices:	99:15; same	96:27; :28	94:04; same
Ask Prices:	99:15; same	96:28; :29	94:04; :05
Face Value:	\$1,687,500	\$1,687,500	\$1,687,500
Total Cost:	\$1,678,535	\$1,634,766	\$1,588,359

	4)	5)	6)
Maturity:	11/97	5/98	11/98
Matur, yrs. fr. 4/3/96	1.614754	2.114754	2.614754
Coupon:	None	None	None
Yield:	5.73%	5.82%	5.90%
Bid Prices:	91:10; same	88:19; same	85:28; :30
Ask Prices:	91:11; same	88:20; same	85:30; 86:00
Face Value:	\$1,687,500	\$1,687,500	\$1,687,500
Total Cost:	\$1,541,426	\$1,495,547	\$1,450,196

	7)
Maturity:	5/99
Matur, yrs. fr. 4/3/96	3.114754
Coupon:	None
Cheapest Ask Yield:	5.95%
Bid Prices:	83:08; :10
Ask Prices:	83:10; :12
Face Value:	\$51,687,500
Total Cost:	\$43,062,148

Values for Replicant B:

Total Cost:	\$52,450,977
Duration:	2.828008

Figure 38

Replicant C: Replicated Equivalent Primary Security (using intermediate T-Notes)

	1)	2)	3)
Maturity:	5/96	11/96	5/97
Matur, yrs. fr. 4/3/96	.114754	.614754	1.114754
Coupon:	7.375%	7.25%	8.50%
Cheapest Ask Yield:	4.46%	5.28%	5.48%
Bid Prices:	100:07; same	101:03; same	103:04; same
Ask Prices:	100:09; :10	101:05; :06	103:06; :07
Repl. Coefficient:	-0.91302988	-0.9466032	-0.98101223
Face Value:	(\$456,515)	(\$473,301)	(\$490,506)
Best Price:	(\$457,514)	(\$478,478)	(\$505,834)
Accrued Interest:	(\$12,970)	(\$13,219)	(\$16,062)
Total Cost (P+AI):	(\$470,484)	(\$491,697)	(\$521,896)
Duration (mod. ann.):	(0.113953)	(0.597015)	(1.059356)
Convexity (mod. ann.)	(0.068843)	(0.647529)	(1.651005)
	4)	5)	6)
Maturity:	11/97	5/98	11/98
Matur, yrs. fr. 4/3/96	1.614754	2.114754	2.614754
Coupon:	8.875%	9.00%	3.50%
Cheapest Ask Yield:	5.71%	5.78%	3.08%
Bid Prices:	104:23; same	106:07; same	100:01; 99:18
Ask Prices:	104:25; :27	106:09; :11	100:01; 100:18
Repl. Coefficient:	-1.0227052	-1.06808799	-1.1161517
Face Value:	(\$511,353)	(\$534,043)	(\$558,076)
Best Price:	(\$535,482)	(\$567,254)	(\$558,250)
Accrued Interest:	(\$17,483)	(\$18,516)	(\$7,525)
Total Cost (P+AI):	(\$552,965)	(\$585,770)	(\$565,775)
Duration (mod. ann.):	(1.500120)	(1.923568)	(2.507384)
Convexity (mod. ann.)	(3.035754)	(4.776208)	(7.597885)
	7)		
Maturity:	5/99		
Matur, yrs. fr. 4/3/96	3.114754		
Coupon:	9.125%		
Cheapest Ask Yield:	5.94%		
Bid Prices:	108:27; :26		
Ask Prices:	108:29; :30		
Repl. Coefficient:	98.864316		
Face Value:	\$49,460,543		
Best Price:	\$53,834,709		
Accrued Interest:	\$1,737,723		
Total Cost (P+AI):	\$55,572,432		
Duration (mod. ann.):	2.716745		
Convexity (mod. ann.)	9.182892		
Values for Replicant C:			
Total Cost:	\$52,383,845		
Duration:	2.603796		

Figure 39

Target Security, a U.S. Treasury Note, held to mature 5/15/99, as on April 3, 1996:

Maturity:	May 1999
Coupon:	6.75% per annum, semi-annual payments
Prices: Bid/Ask	102:07; 102:07 / 102:09; 102:11
Face Value:	\$50 million
Best Price:	\$51,140,625
Accrued Interest:	\$1,300,205
Total Cost (P+AI):	\$52,440,830
Duration (mod. ann.):	2.782972

Figure 40

of Duration		
Target	2.7829	can be sold for \$52,409,580 and bought for \$52,440,830
REPS A	2.6104	can be sold for \$52,383,749 and bought for \$52,416,144
REPS B	2.8280	can be sold for \$52,450,920 and bought for \$52,450,977
REPS C	2.6038	can be sold for \$52,351,321 and bought for \$52,383,845

Figure 41

Arbitrage Opportunities				Sorted Arbitrage Opportunities			
Buying	Selling	\$ Arb.	Differ.	Buying	Selling	\$ Arb.	Diff.
Target	A	-31250	-0.0006	C	B	67075	0.00128
Target	B	-57081	-0.00109	A	B	34776	0.000663
Target	C	-89509	-0.00171	C	Target	25735	0.000491
A	Target	-6564	-0.00013	C	A	-96	-1.8E-06
A	B	34776	0.000663	A	Target	-6564	-0.00013
A	C	-64823	-0.00124	Target	A	-31250	-0.0006
B	Target	-41397	-0.00079	B	Target	-41397	-0.00079
B	A	-67228	-0.00128	Target	B	-57081	-0.00109
B	C	-99656	-0.0019	A	C	-64823	-0.00124
C	Target	25735	0.000491	B	A	-67228	-0.00128
C	A	-96	-1.8E-06	Target	C	-89509	-0.00171
C	B	67075	0.00128	B	C	-99656	-0.0019

Figure 42

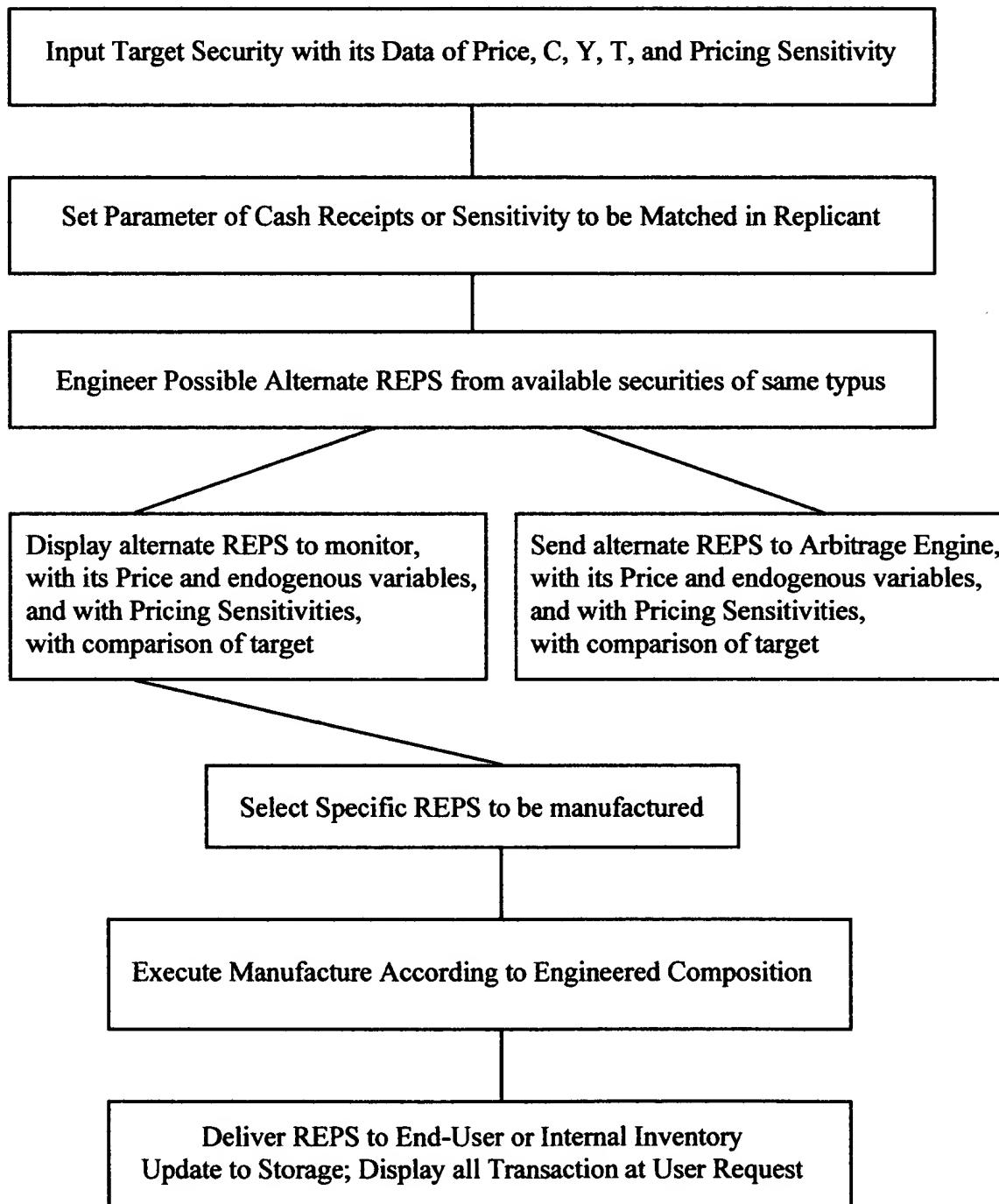


Figure 43

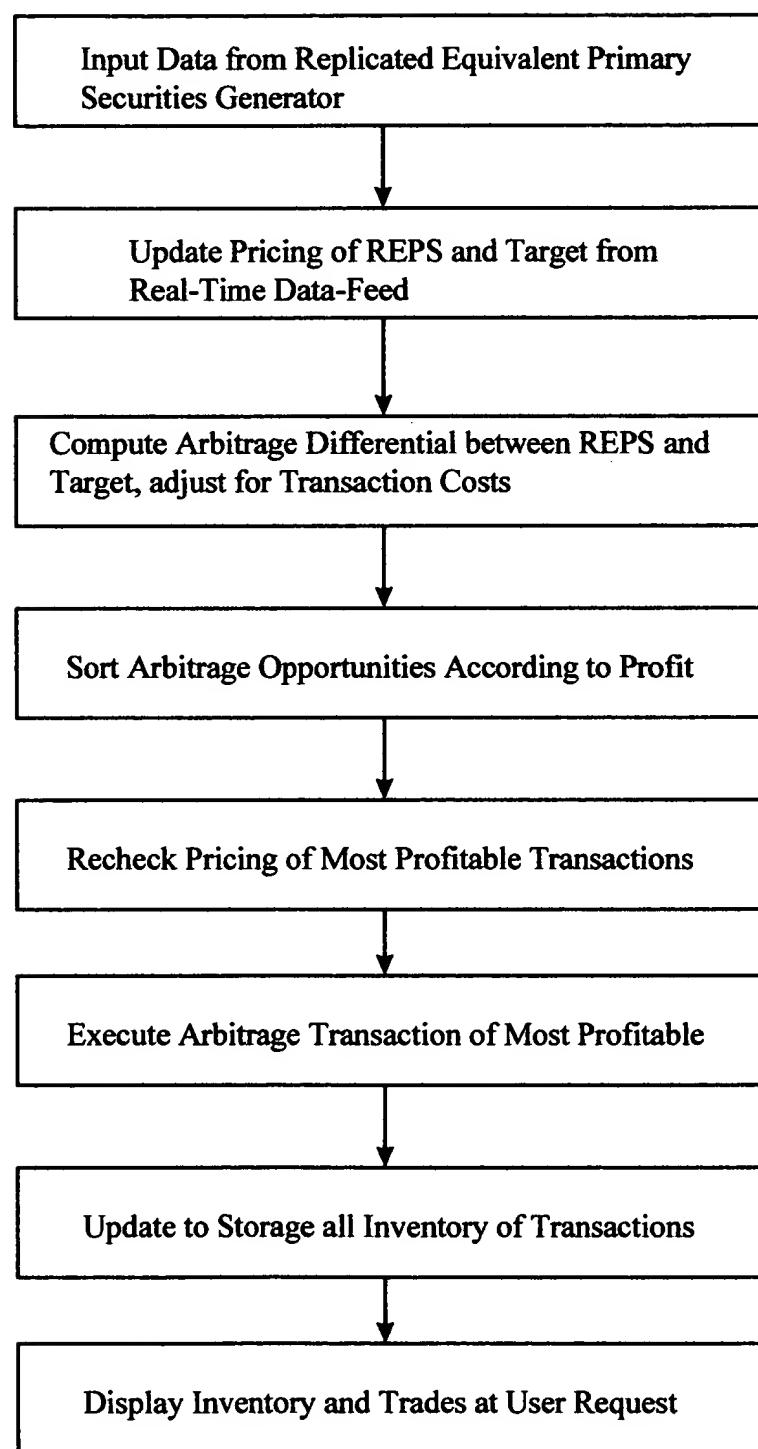


Figure 44

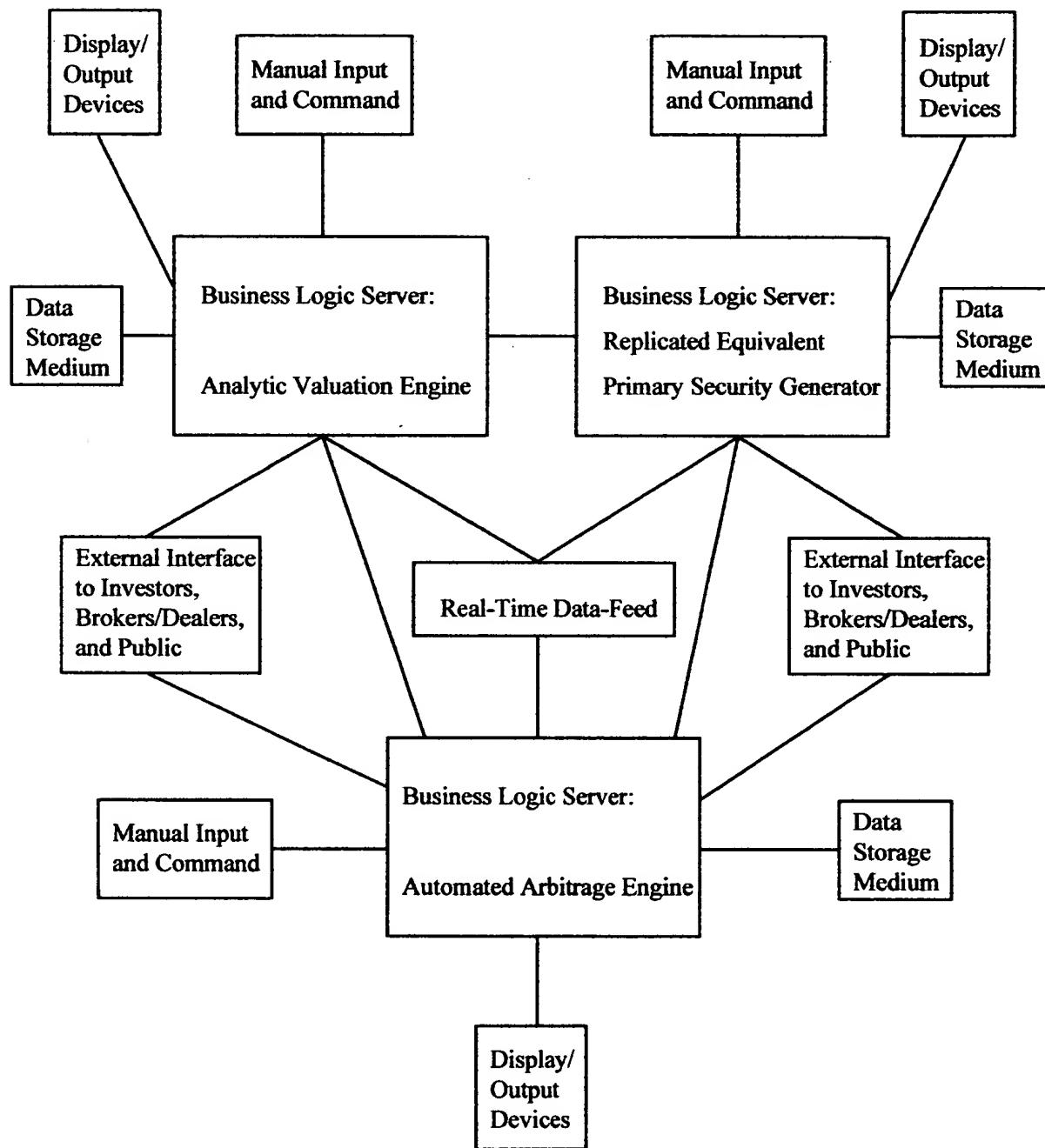


Figure 45

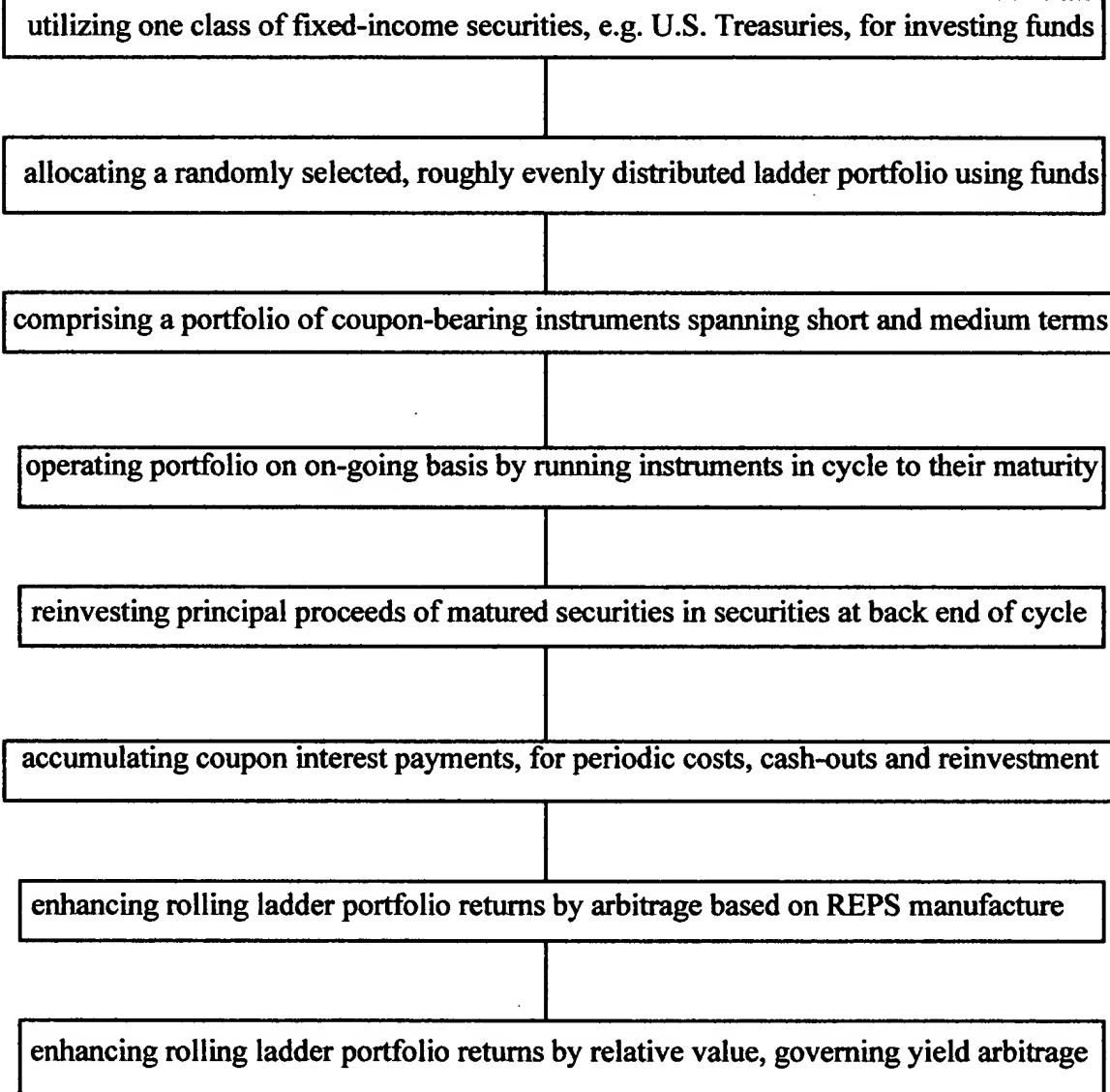


Figure 46

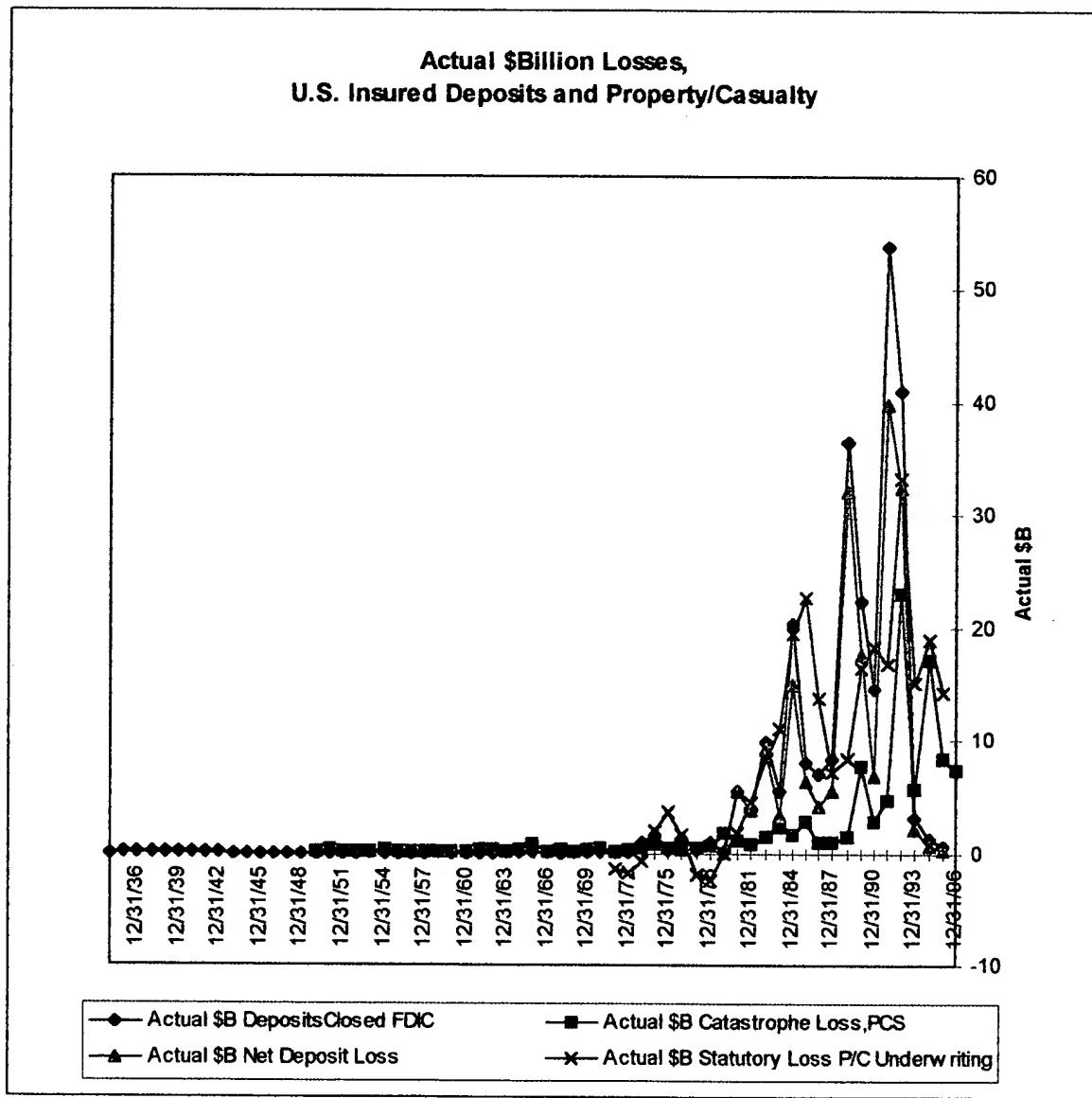


Figure 47

Scalar	Nominal \$ Values						Adj \$ 1972 Values					
	Value \$	Annual	Actual \$B	Actual \$B	Actual \$B	Actual \$B	Annual	Adj\$ 1972	Adj\$ 1972	\$	Adj\$ 1972	Adj \$B
Basis	1972 Year End	Deposits	Catastropi	Net Depos	Statutory	1 Year End	DepCI	CatLoss	DepLoss	Underwr	Stat Loss	
CPI	Year End	FDIC	Loss, PCS	Loss	P/C Under	Year End	DepCI	CatLoss	DepLoss	Underwr	Stat Loss	
0.26699	12/31/96		7.35			12/31/96		1.962379				
0.275	12/31/95	0.632	8.335	0.332	14.2	12/31/95	0.1738	2.292125	0.0913	3.905		
0.2875	12/31/94	1.236	17.045	0.636	19	12/31/94	0.35535	4.900438	0.18285	5.4625		
0.2875	12/31/93	3.132	5.585	2.132	15.1	12/31/93	0.90045	1.605688	0.61295	4.34125		
0.3	12/31/92	40.94	22.974	32.34	33.3	12/31/92	12.282	6.8922	9.702	9.99		
0.3125	12/31/91	53.832	4.711	39.732	16.7	12/31/91	16.8225	1.472188	12.41625	5.21875		
0.325	12/31/90	14.489	2.807	6.889	18.2	12/31/90	4.708925	0.912275	2.238925	5.915		
0.3375	12/31/89	22.28	7.642	17.58	16.5	12/31/89	7.5195	2.579175	5.93325	5.56875		
0.35	12/31/88	36.432	1.409	32.132	8.4	12/31/88	12.7512	0.49315	11.2462	2.94		
0.3625	12/31/87	8.4	0.946	5.4	7.1	12/31/87	3.045	0.342925	1.9575	2.57375		
0.375	12/31/86	7.057	0.871	4.057	13.7	12/31/86	2.646375	0.326625	1.521375	5.1375		
0.3875	12/31/85	8.059	2.816	6.359	22.6	12/31/85	3.122863	1.0912	2.464113	8.7575		
0.4	12/31/84	20.334	1.548	14.834	19.4	12/31/84	8.1336	0.6192	5.9336	7.76		
0.425	12/31/83	5.442	2.255	3.242	11.1	12/31/83	2.31285	0.958375	1.37785	4.7175		
0.4375	12/31/82	9.904	1.523	9.104	8.3	12/31/82	4.333	0.666313	3.983	3.63125		
0.4625	12/31/81	3.826	0.714	3.756	4.5	12/31/81	1.769525	0.330225	1.73715	2.08125		
0.5125	12/31/80	5.516	1.178	5.416	1.7	12/31/80	2.82695	0.603725	2.7757	0.87125		
0.575	12/31/79	0.111	1.705		-0.02	12/31/79	0.063825	0.980375		-0.0115		
0.6375	12/31/78	0.854	0.645		-2.5	12/31/78	0.544425	0.411188		-1.59375		
0.6875	12/31/77	0.205	0.423		-1.9	12/31/77	0.140938	0.290813		-1.30625		
0.7375	12/31/76	1.235	0.271		1.6	12/31/76	0.910813	0.199863		1.18		
0.775	12/31/75	0.34	0.513		3.6	12/31/75	0.2635	0.397575		2.79		
0.85	12/31/74	1.576	0.696		1.9	12/31/74	1.3396	0.5916		1.615		
0.9375	12/31/73	0.971	0.375		-0.8	12/31/73	0.910313	0.351563		-0.75		
1	12/31/72	0.02	0.214		-1.8	12/31/72	0.02	0.214		-1.8		
	12/31/71	0.141	0.173		-1.4	12/31/71	0.141	0.173		-1.4		
	12/31/70	0.052	0.45			12/31/70	0.052	0.45				
	12/31/69	0.04	0.256			12/31/69	0.04	0.256				
	12/31/68	0.023	0.134			12/31/68	0.023	0.134				
	12/31/67	0.011	0.327			12/31/67	0.011	0.327				
	12/31/66	0.104	0.111			12/31/66	0.104	0.111				
	12/31/65	0.044	0.694			12/31/65	0.044	0.694				
	12/31/64	0.023	0.196			12/31/64	0.023	0.196				
	12/31/63	0.023	0.034			12/31/63	0.023	0.034				
	12/31/62	0.003	0.197			12/31/62	0.003	0.197				
	12/31/61	0.009	0.184			12/31/61	0.009	0.184				
	12/31/60	0.007	0.129			12/31/60	0.007	0.129				
	12/31/59	0.003	0.048			12/31/59	0.003	0.048				
	12/31/58	0.025				12/31/58	0.025					
	12/31/57	0.011	0.073			12/31/57	0.011	0.073				
	12/31/56	0.011	0.072			12/31/56	0.011	0.072				
	12/31/55	0.012	0.095			12/31/55	0.012	0.095				
	12/31/54	0.001	0.299			12/31/54	0.001	0.299				
	12/31/53	0.044	0.089			12/31/53	0.044	0.089				
	12/31/52	0.003	0.024			12/31/52	0.003	0.024				
	12/31/51	0.003	0.017			12/31/51	0.003	0.017				
	12/31/50	0.006	0.231			12/31/50	0.006	0.231				
	12/31/49	0.006	0.022			12/31/49	0.006	0.022				
	12/31/48	0.01				12/31/48	0.01					
	12/31/47	0.007				12/31/47	0.007					
	12/31/46	0.001				12/31/46	0.001					
	12/31/45	0.006				12/31/45	0.006					
	12/31/44	0.002				12/31/44	0.002					
	12/31/43	0.012				12/31/43	0.012					
	12/31/42	0.017				12/31/42	0.017					
	12/31/41	0.03				12/31/41	0.03					
	12/31/40	0.144				12/31/40	0.144					
	12/31/39	0.161				12/31/39	0.161					
	12/31/38	0.062				12/31/38	0.062					
	12/31/37	0.033				12/31/37	0.033					
	12/31/36	0.028				12/31/36	0.028					
	12/31/35	0.013				12/31/35	0.013					
	12/31/34	0.002				12/31/34	0.002					

Figure 48

LN Adj\$ 1972 Values					LN Adj\$ 1972 delta Values				
Annual	LN DepCl	Adj1972 \$B	LN Adj\$	LN Adj \$B	Annual	Adj\$ 1972	LN Delta	LN delta	LN delta
Year End	Adj\$ 1972	CatLoss	LN Adj\$	Stat Loss	Year End	DepCl	CatLoss	DepLoss	Adj\$BStat
Year End	LN DepCl	LN	LN	DepLoss	Underwr	Year End	LN Delta	LN delta	Loss Unw
12/31/96						12/31/96			
12/31/95	-1.74985	0.829479	-2.3936	1.362258	12/31/95	-0.7152	-0.75985	-0.69452	-0.2912
12/31/94	-1.03465	1.589324	-1.69909	1.697907	12/31/94	-0.92979	1.115772	-1.20962	0.229744
12/31/93	-0.10486	0.473552	-0.48947	1.468162	12/31/93	-2.613	-1.45684	-2.7618	-0.79086
12/31/92	2.508135	1.93039	2.272332	2.301585	12/31/92	-0.31458	1.543641	-0.24667	0.690149
12/31/91	2.822717	0.386749	2.519006	1.652258	12/31/91	1.273258	0.478563	1.71301	-0.08601
12/31/90	1.54946	-0.09181	0.805996	1.777491	12/31/90	-0.46804	-1.03928	-0.97458	0.098061
12/31/89	2.0175	0.94747	1.780572	1.717171	12/31/89	-0.52813	1.654411	-0.63946	0.675129
12/31/88	2.545625	-0.70694	2.42003	1.07841	12/31/88	1.432124	0.363302	1.748362	0.168137
12/31/87	1.113501	-1.07024	0.671668	0.945364	12/31/87	0.14031	0.048699	0.252054	-0.6573
12/31/86	0.973191	-1.11894	0.419615	1.636567	12/31/86	-0.16556	-1.20622	-0.48222	-0.50055
12/31/85	1.13875	0.087278	0.901832	2.16991	12/31/85	-0.95725	0.566605	-0.8788	0.152677
12/31/84	2.096004	-0.47933	1.780631	2.048982	12/31/84	1.257523	-0.43681	1.460107	0.558328
12/31/83	0.838481	-0.04252	0.320524	1.551279	12/31/83	-0.62778	0.36348	-1.06151	0.29069
12/31/82	1.46626	-0.406	1.382035	1.289577	12/31/82	0.895549	0.701985	0.829789	0.612178
12/31/81	0.570711	-1.10798	0.552246	0.732969	12/31/81	-0.46849	-0.60334	-0.46866	0.973449
12/31/80	1.039198	-0.50464	1.020903	-0.13783	12/31/80	3.790809	-0.48482		
12/31/79	-2.75161	-0.01982		-0.2	12/31/79	-2.14359	0.868886		0
12/31/78	-0.60803	-0.88871		-0.3	12/31/78	1.351414	0.346371		0
12/31/77	-1.95944	-1.23508		-0.2	12/31/77	-1.86602	0.375049		0
12/31/76	-0.09342	-1.61013		0.165514	12/31/76	1.240284	-0.68775		-0.81093
12/31/75	-1.3337	-0.92237		1.026042	12/31/75	-1.62607	-0.39745		0.63908
12/31/74	0.292371	-0.52492		0.479335	12/31/74	0.386338	0.520443		0
12/31/73	-0.09397	-1.04537		-0.2	12/31/73	3.818056	0.496411		0
12/31/72	-3.91202	-1.54178		-0.3	12/31/72	-1.95303	0.212684		
12/31/71	-1.959	-1.75446		-0.2	12/31/71	0.997516	-0.95596		
12/31/70	-2.95651	-0.79851			12/31/70	0.262364	0.56407		
12/31/69	-3.21888	-1.36258			12/31/69	0.553385	0.647338		
12/31/68	-3.77226	-2.00992			12/31/68	0.737599	-0.89212		
12/31/67	-4.50986	-1.1178			12/31/67	-2.2465	1.08043		
12/31/66	-2.26336	-2.19823			12/31/66	0.860201	-1.83294		
12/31/65	-3.12357	-0.36528			12/31/65	0.648695	1.264357		
12/31/64	-3.77226	-1.62964			12/31/64	0	1.751754		
12/31/63	-3.77226	-3.38139			12/31/63	2.036882	-1.75684		
12/31/62	-5.80914	-1.62455			12/31/62	-1.09861	0.068268		
12/31/61	-4.71053	-1.69282			12/31/61	0.251314	0.355123		
12/31/60	-4.96185	-2.04794			12/31/60	0.847298	0.988611		
12/31/59	-5.80914	-3.03655			12/31/59	0	0.652325		
12/31/58		-3.68888			12/31/58		-1.07158		
12/31/57	-4.50986	-2.6173			12/31/57	0	0.013793		
12/31/56	-4.50986	-2.63109			12/31/56	-0.08701	-0.27721		
12/31/55	-4.42285	-2.35388			12/31/55	2.484907	-1.14657		
12/31/54	-6.90776	-1.20731			12/31/54	-3.78419	1.211807		
12/31/53	-3.12357	-2.41912			12/31/53	2.685577	1.310583		
12/31/52	-5.80914	-3.7297			12/31/52	0	0.34484		
12/31/51	-5.80914	-4.07454			12/31/51	-0.69315	-2.6092		
12/31/50	-5.116	-1.46534			12/31/50	0	2.351375		
12/31/49	-5.116	-3.81671			12/31/49	-0.51083			
12/31/48	-4.60517				12/31/48	0.356675			
12/31/47	-4.96185				12/31/47	1.94591			
12/31/46	-6.90776				12/31/46	-1.79176			
12/31/45	-5.116				12/31/45	1.098612			
12/31/44	-6.21461				12/31/44	-1.79176			
12/31/43	-4.42285				12/31/43	-0.34831			
12/31/42	-4.07454				12/31/42	-0.56798			
12/31/41	-3.50656				12/31/41	-1.56862			
12/31/40	-1.93794				12/31/40	-0.11159			
12/31/39	-1.82635				12/31/39	0.95427			
12/31/38	-2.78062				12/31/38	0.630627			
12/31/37	-3.41125				12/31/37	0.164303			
12/31/36	-3.57555				12/31/36	0.767255			
12/31/35	-4.34281				12/31/35	1.871802			
12/31/34	-6.21461				12/31/34				

Figure 49

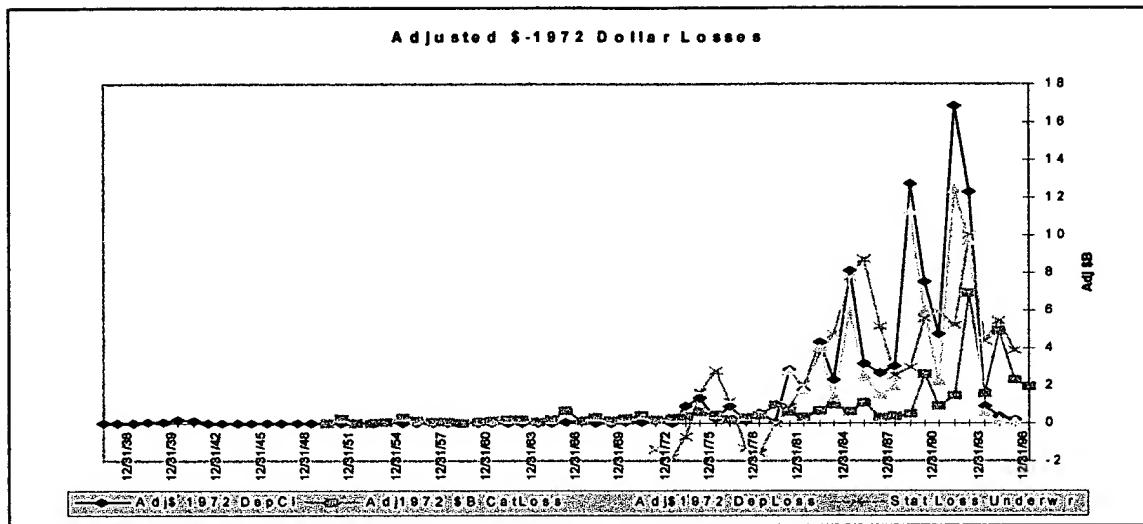


Figure 50

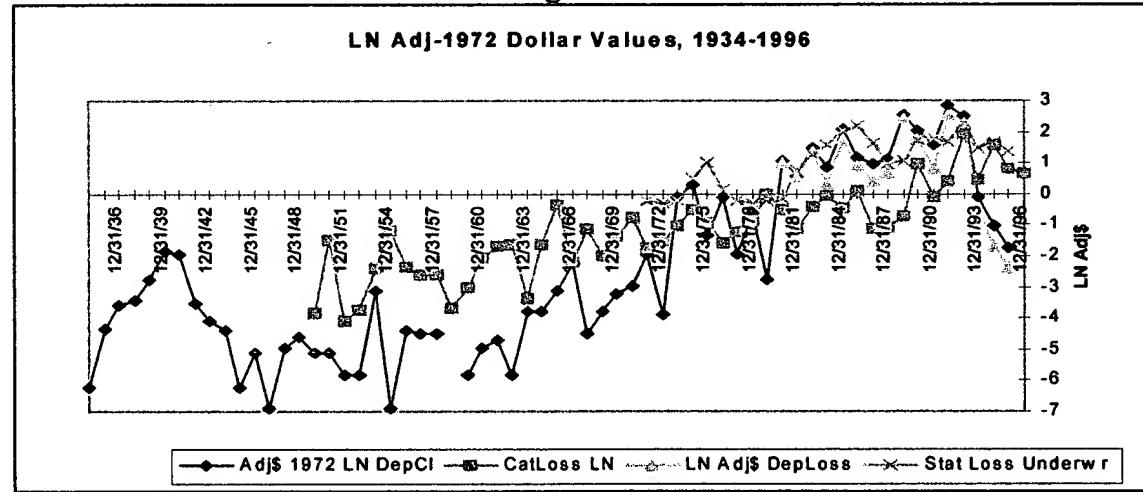


Figure 51

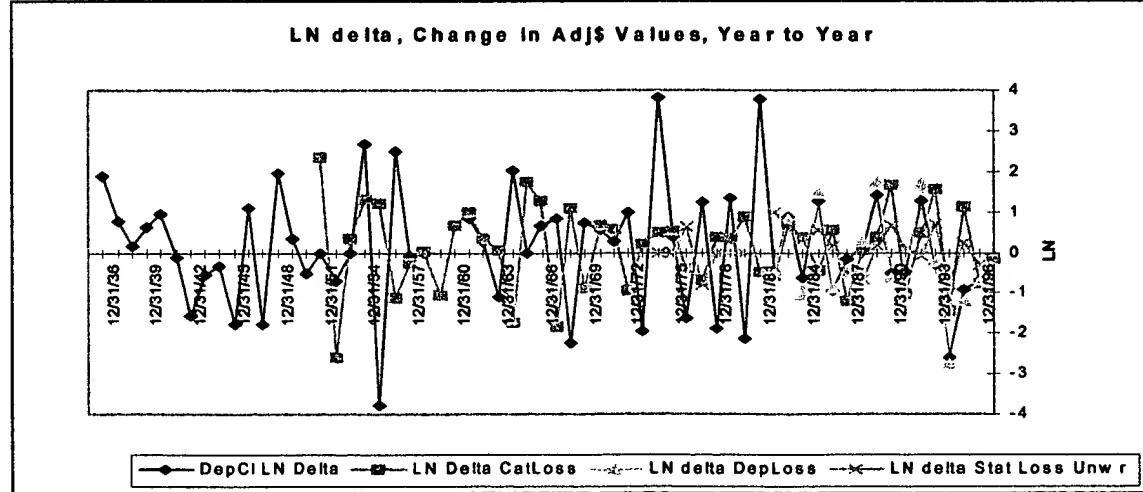


Figure 52

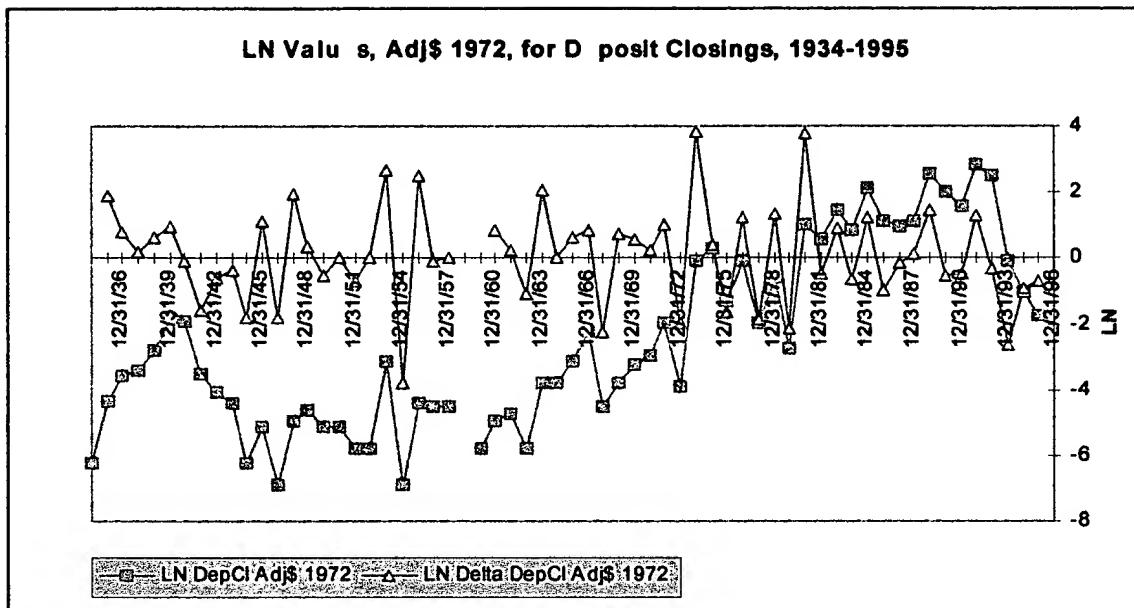


Figure 53

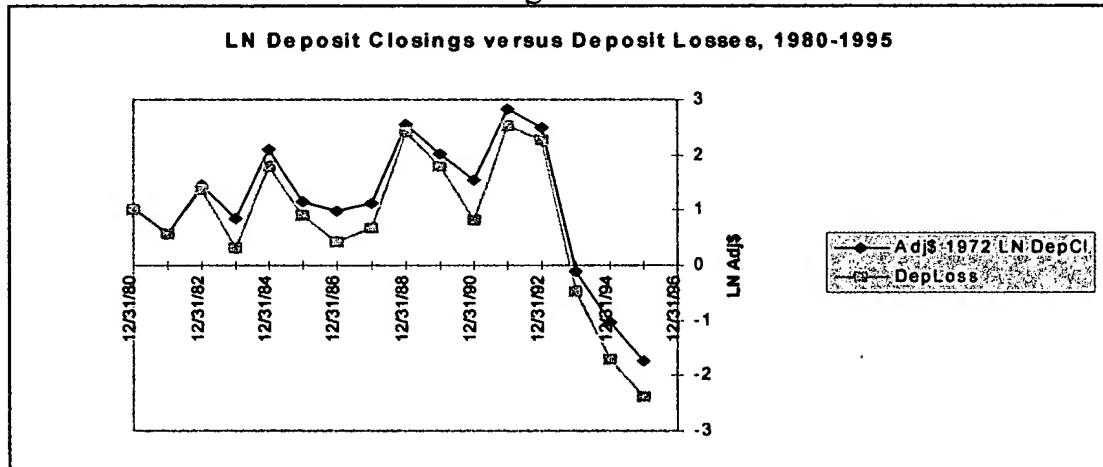


Figure 54

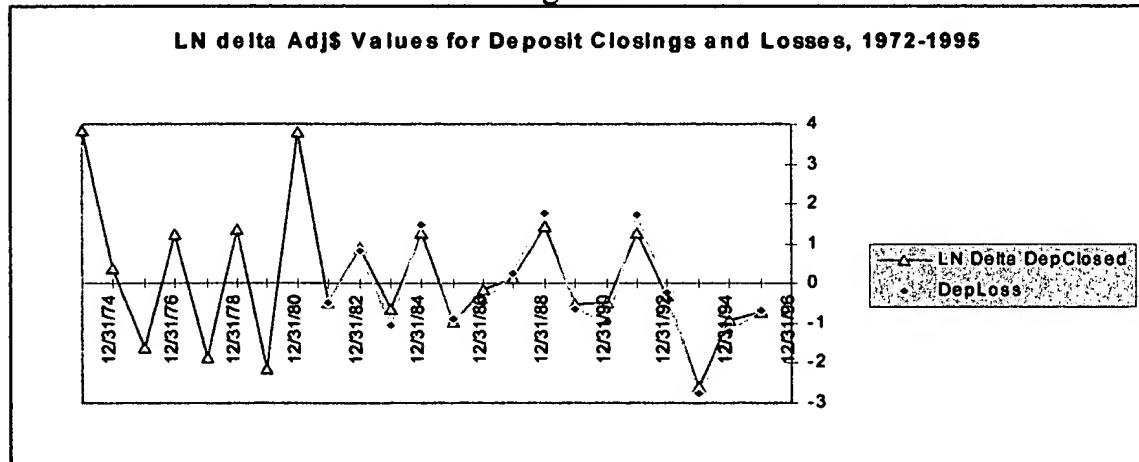


Figure 55

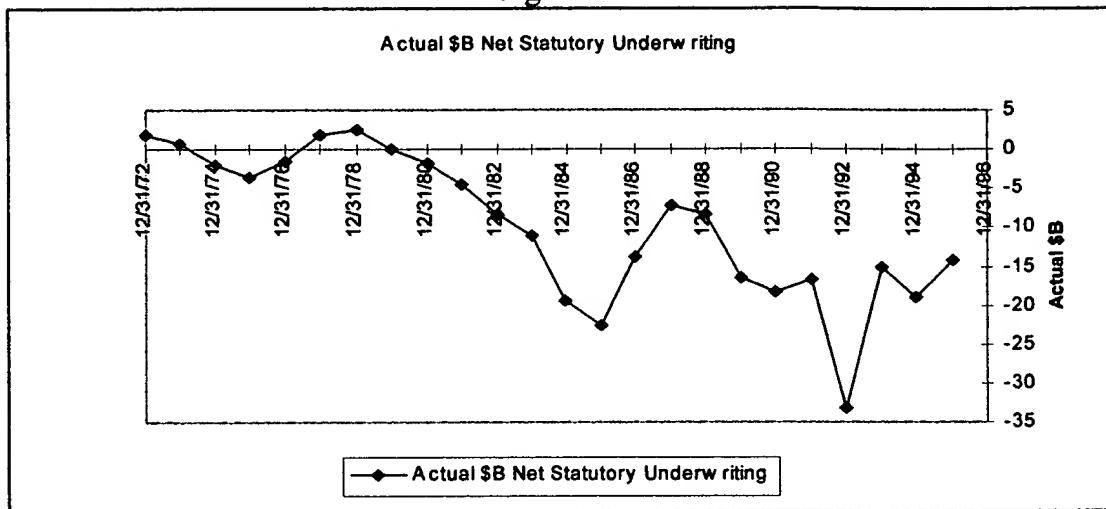


Figure 56

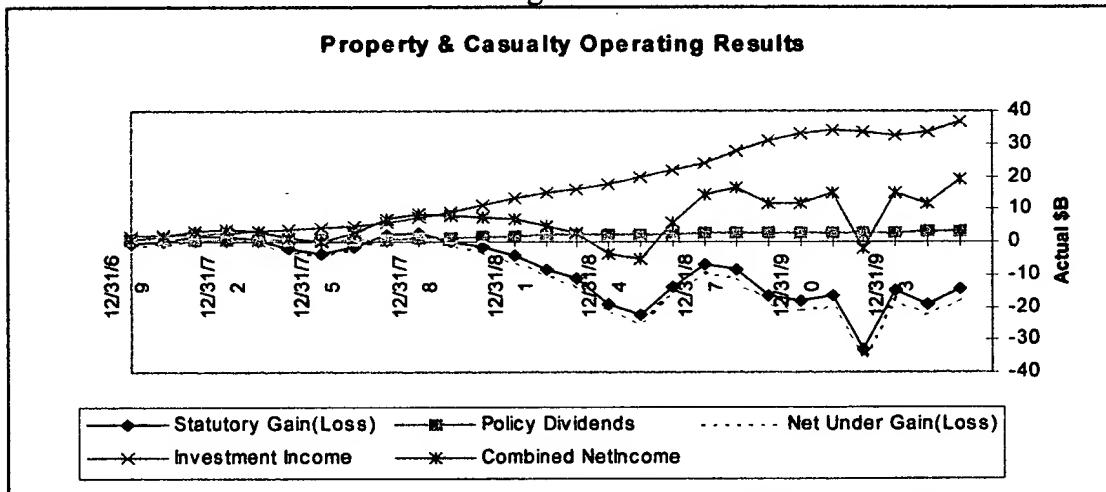


Figure 57

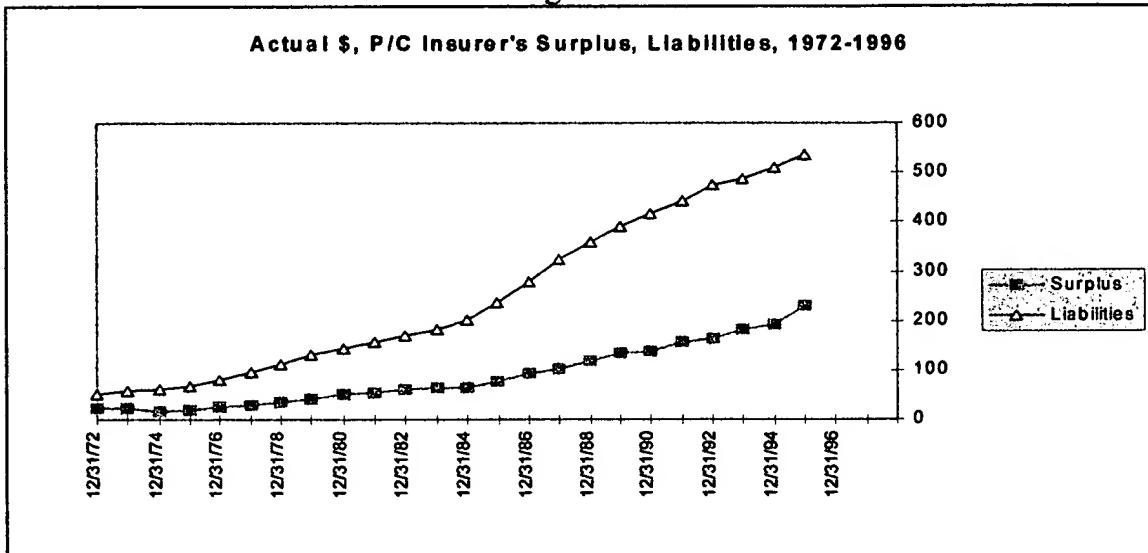


Figure 58

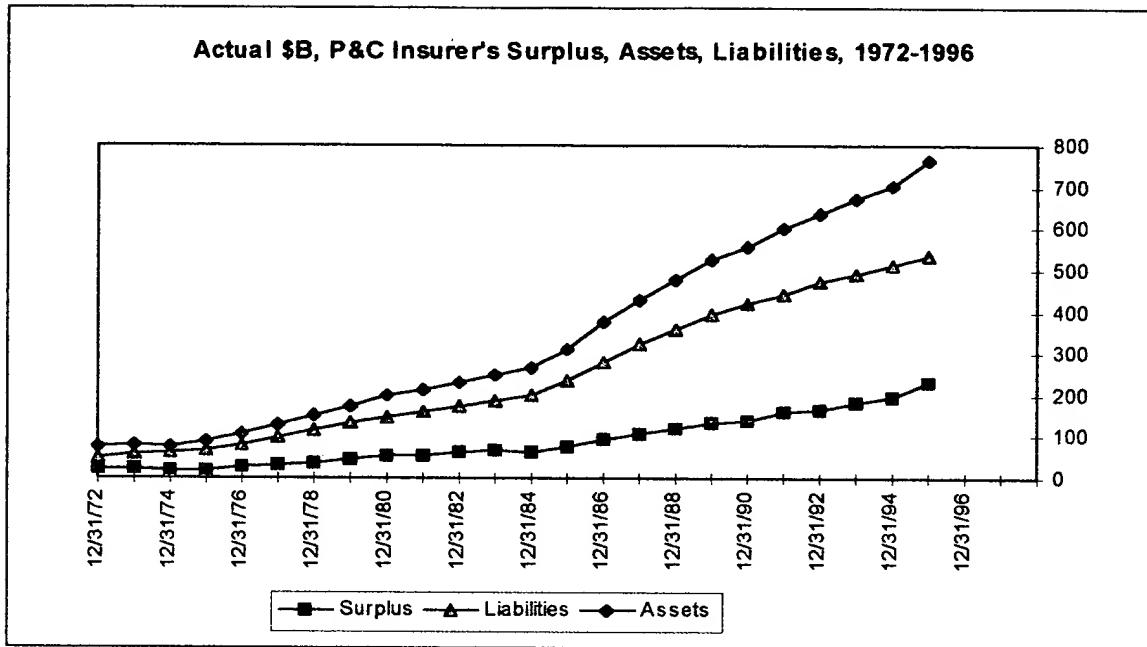


Figure 59

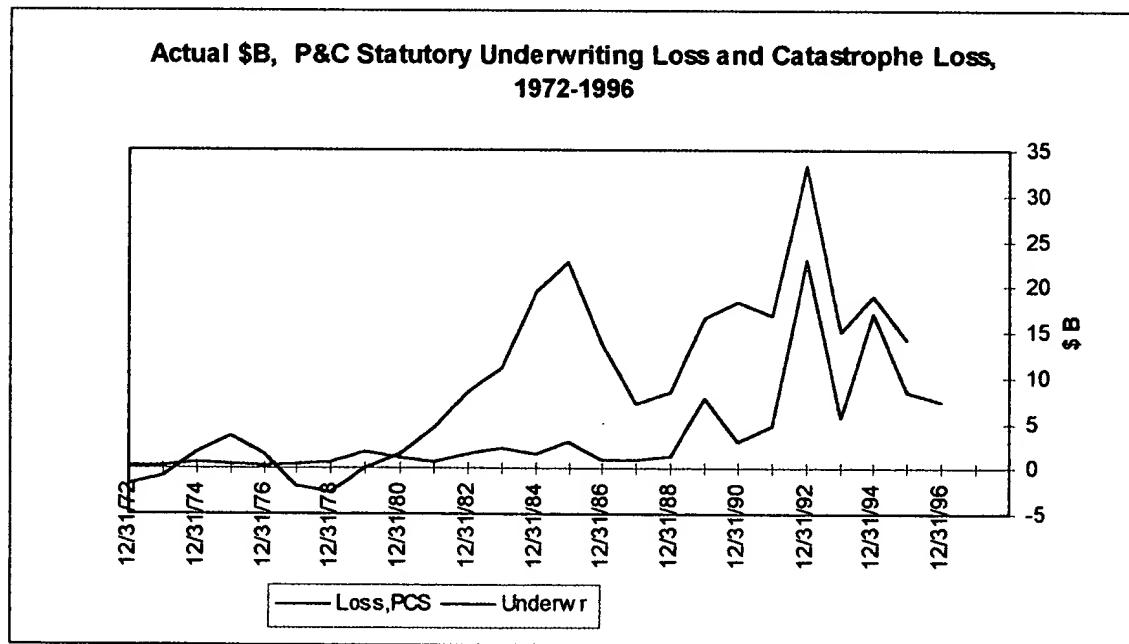


Figure 60

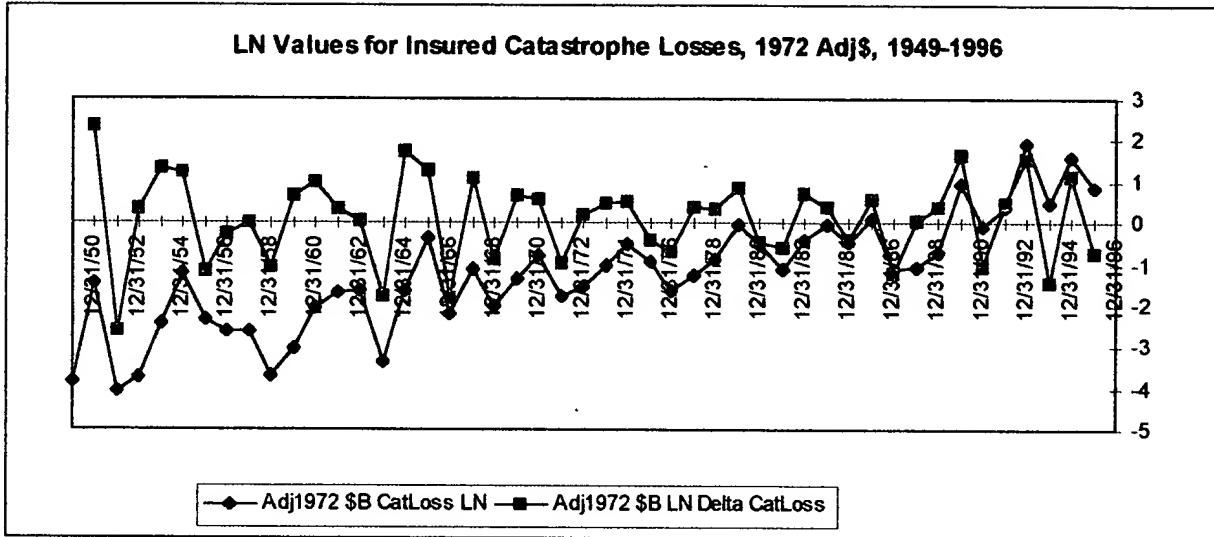


Figure 61

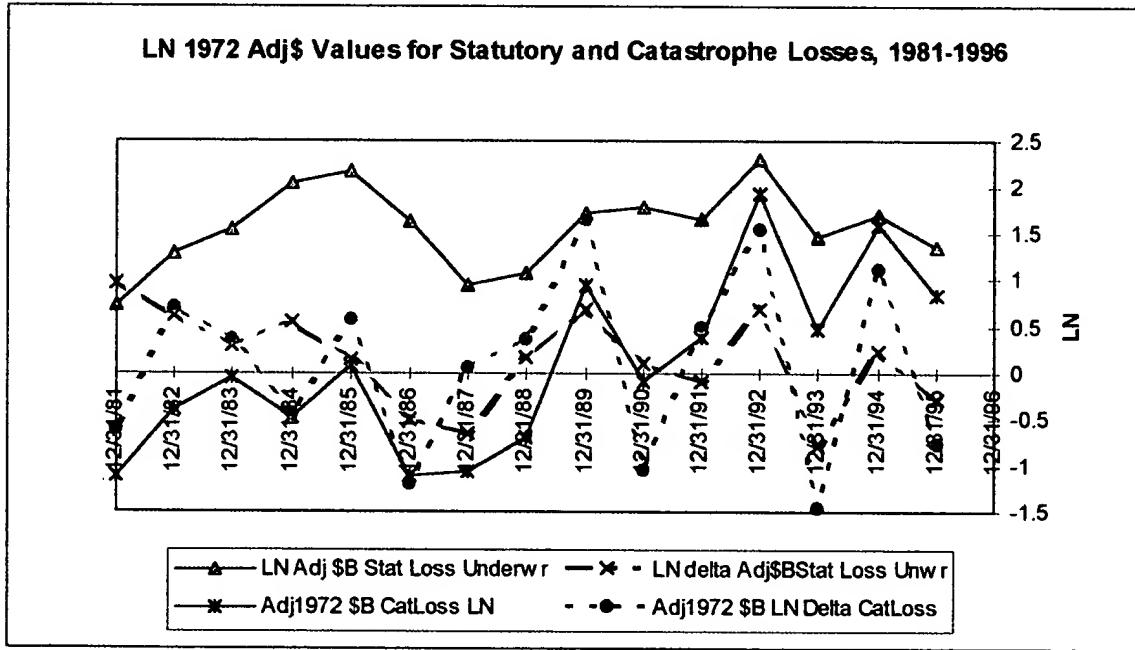


Figure 62

Deposits Closed 1973-1995					
	Act\$BDepCI	Adj\$BDepCI	LN Adj\$BDepCI	LN deltaAdj\$BDepCI	Adj
Mean	10.73057	Mean	3.820752	Mean	0.094008
Standard E	3.063359	Standard E	0.965447	Standard E	0.31951
Median	5.442	Median	2.31285	Median	-0.31458
Mode	#N/A	Mode	#N/A	Mode	#N/A
Standard C	14.69135	Standard C	4.630121	Standard C	1.532316
Sample Va	215.8359	Sample Va	21.43802	Sample Va	2.347993
Kurtosis	2.753699	Kurtosis	1.983528	Kurtosis	0.609058
Skewness	1.838003	Skewness	1.639766	Skewness	0.721656
Range	53.721	Range	16.75868	Range	6.431051
Minimum	0.111	Minimum	0.063825	Minimum	-2.75161
Maximum	53.832	Maximum	16.8225	Maximum	2.822717
Sum	246.803	Sum	87.8773	Sum	11.24238
Count	23	Count	23	Count	23
Confidence	6.353025	Confidence	2.002217	Confidence	0.662624
					0.710636

Figure 63

Catastrophe Loss, 1973-1995					
	Act\$BCatLoss	Adj\$BCatLoss	LNAj\$BCatLoss	LNdeltaAdj\$BCatLoss	
Mean	3.782043	Mean	1.274296	Mean	0.103098
Standard E	1.181391	Standard E	0.336855	Standard E	0.19276
Median	1.523	Median	0.6192	Median	0.363302
Mode	#N/A	Mode	#N/A	Mode	#N/A
Standard C	5.665751	Standard C	1.615499	Standard C	0.924446
Sample Va	32.10073	Sample Va	2.609836	Sample Va	0.854601
Kurtosis	6.303979	Kurtosis	6.897762	Kurtosis	-0.63766
Skewness	2.518331	Skewness	2.595322	Skewness	-0.06046
Range	22.703	Range	6.692338	Range	3.11125
Minimum	0.271	Minimum	0.199863	Minimum	-1.61013
Maximum	22.974	Maximum	6.8922	Maximum	1.93039
Sum	86.987	Sum	29.3088	Sum	-5.53055
Count	23	Count	23	Count	23
Confidence	2.450057	Confidence	0.698595	Confidence	0.399761
					0.364354

Figure 64

LN Deposit Closings, 1979-95		LN Cat Losses, 1979-95	
<i>Column1</i>		<i>Column1</i>	
Mean	1.881462	Mean	1.037784
Standard E	0.384475	Standard E	0.252061
Median	2.086789	Median	0.81315
Mode	#N/A	Mode	#N/A
Standard C	1.585229	Standard C	1.039273
Sample Va	2.512951	Sample Va	1.080089
Kurtosis	1.519364	Kurtosis	-0.49638
Skewness	-1.09525	Skewness	0.669703
Range	6.184093	Range	3.471235
Minimum	-2.19823	Minimum	-0.33687
Maximum	3.985868	Maximum	3.134363
Sum	31.98486	Sum	17.64232
Count	17	Count	17
Confidence	0.815049	Confidence	0.534345

Figure 65

LN delta Adj1972 \$ DepClose and CatLoss 1934-1995 1949-1996			
<i>DepClosed</i>		<i>CatLoss</i>	
Mean	0.097696	Mean	0.09555
Standard E	0.191481	Standard E	0.151993
Median	0	Median	0.346371
Mode	0	Mode	#N/A
Standard C	1.470796	Standard C	1.042011
Sample Va	2.163242	Sample Va	1.085787
Kurtosis	0.609433	Kurtosis	-0.05102
Skewness	0.095751	Skewness	-0.32992
Range	7.602245	Range	4.96058
Minimum	-3.78419	Minimum	-2.6092
Maximum	3.818056	Maximum	2.351375
Sum	5.764041	Sum	4.49087
Count	59	Count	47
Confidence	0.383291	Confidence	0.305946

Figure 66

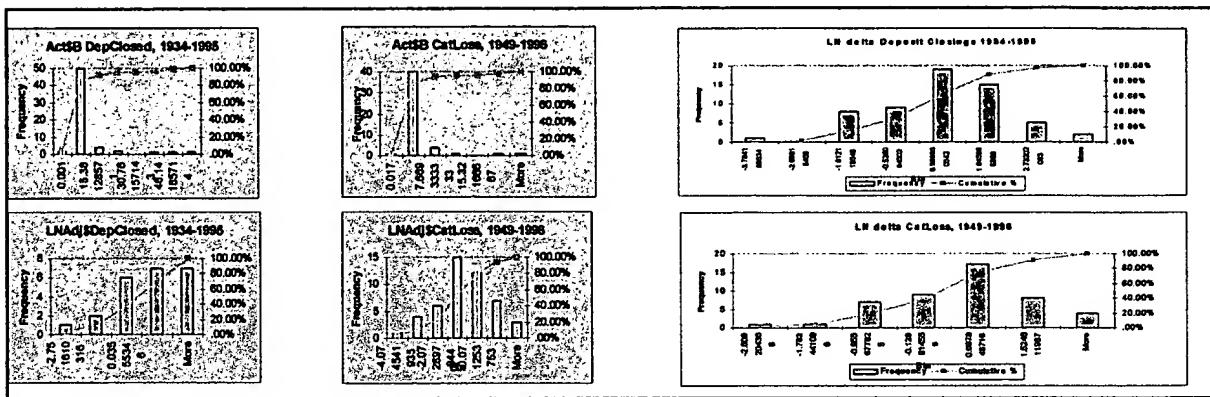


Figure 67

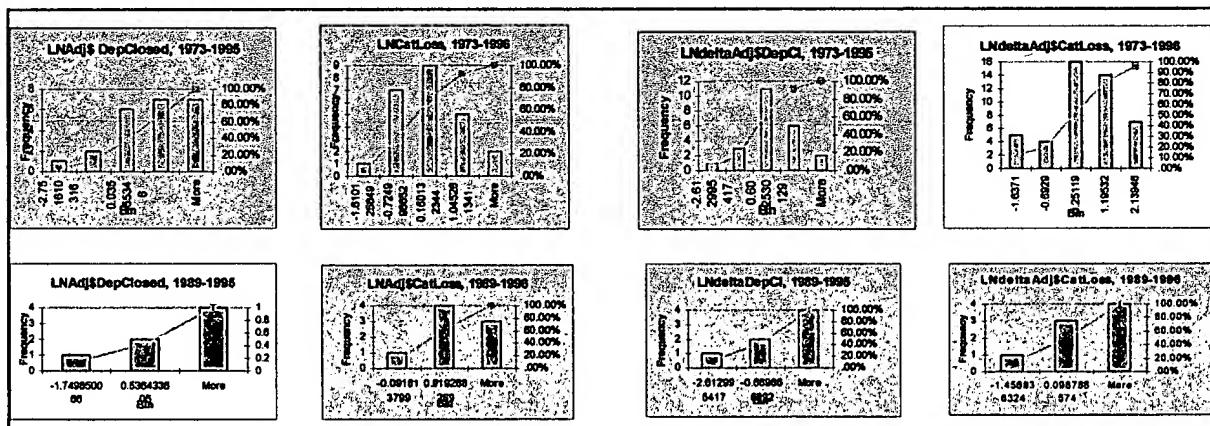


Figure 68

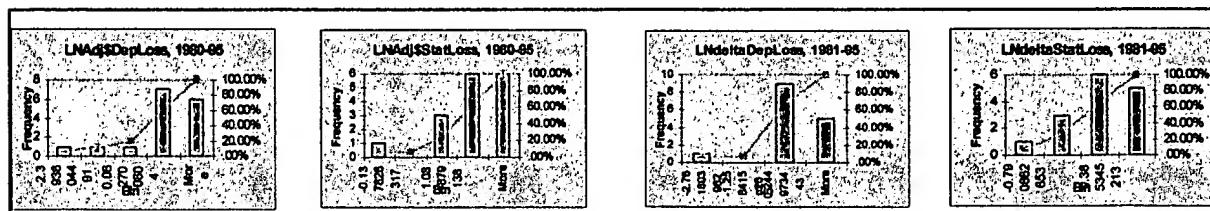


Figure 69

Annual Year End	"Total Dep	%1934Ins	%1934Ins	%1934Ins	%1934Ins	
Year End	%Insured	Scalar	Act\$B	Adj\$1972	LN Adj\$	LNdeltaAdj
Year End			DepClose	DepClose	DepClose	DepClose
12/31/96						
12/31/95	75.8	1.68071	0.376032	0.100397	-2.29862	-0.6846
12/31/94	77	1.707317	0.723943	0.199084	-1.61403	-0.98076
12/31/93	76.5	1.696231	1.846447	0.530854	-0.63327	-2.55874
12/31/92	77.4	1.716186	23.85522	6.858376	1.925471	-0.31245
12/31/91	77.7	1.722838	31.24612	9.373835	2.237922	1.248218
12/31/90	75.9	1.682927	8.609406	2.690439	0.989704	-0.4682
12/31/89	76	1.685144	13.22142	4.296962	1.457908	-0.54141
12/31/88	75.1	1.665188	21.8786	7.384029	1.999319	1.433508
12/31/87	75.3	1.669623	5.031076	1.760876	0.565812	0.140447
12/31/86	75.4	1.67184	4.221097	1.530148	0.425364	-0.15743
12/31/85	76.1	1.687361	4.776096	1.791036	0.582794	-0.94784
12/31/84	76.9	1.7051	11.9254	4.621093	1.530631	1.261381
12/31/83	75	1.662971	3.272456	1.308982	0.26925	-0.68098
12/31/82	73.4	1.627494	6.085428	2.586307	0.950231	0.958256
12/31/81	76.1	1.687361	2.267445	0.992007	-0.00802	-0.41095
12/31/80	76.9	1.7051	3.235001	1.496188	0.402921	3.778206
12/31/79	75	1.662971	0.066748	0.034208	-3.37529	-2.17703
12/31/78	73.4	1.627494	0.524733	0.301721	-1.19825	1.279161
12/31/77	70.2	1.556541	0.131702	0.08396	-2.47741	-1.85158
12/31/76	71.6	1.587583	0.777912	0.534815	-0.62584	1.13672
12/31/75	65.9	1.461197	0.232686	0.171606	-1.76256	-1.57574
12/31/74	66.4	1.472284	1.070446	0.829595	-0.18682	0.384387
12/31/73	65.9	1.461197	0.664524	0.564845	-0.5712	3.79668
12/31/72	66.7	1.478936	0.013523	0.012678	-4.36788	-2.04338
12/31/71	65	1.441242	0.097832	0.097832	-2.3245	0.958295
12/31/70	62.5	1.385809	0.037523	0.037523	-3.2828	0.233141
12/31/69	60.7	1.345898	0.02972	0.02972	-3.51594	0.545114
12/31/68	60.2	1.334812	0.017231	0.017231	-4.06105	0.703812
12/31/67	58.2	1.280466	0.008524	0.008524	-4.76486	-2.24307
12/31/66	58.4	1.2949	0.080315	0.080315	-2.5218	0.811069
12/31/65	55.6	1.232816	0.035691	0.035691	-3.33287	0.637845
12/31/64	55	1.219512	0.01886	0.01886	-3.97071	0.028676
12/31/63	56.6	1.254989	0.018327	0.018327	-3.99939	2.047427
12/31/62	57.2	1.268293	0.002365	0.002365	-6.04681	-1.10211
12/31/61	57	1.263858	0.007121	0.007121	-4.9447	0.260048
12/31/60	57.5	1.274945	0.00549	0.00549	-5.20475	0.845557
12/31/59	57.4	1.272727	0.002357	0.002357	-6.05031	
12/31/58	56.8	1.259424	0	0		
12/31/57	56.3	1.248337	0.008812	0.008812	-4.73167	-0.01973
12/31/56	55.2	1.223947	0.008987	0.008987	-4.71194	-0.09428
12/31/55	54.8	1.215078	0.009876	0.009876	-4.61766	2.48125
12/31/54	54.6	1.210643	0.000826	0.000826	-7.09891	-3.78419
12/31/53	54.6	1.210643	0.036344	0.036344	-3.31472	2.676378
12/31/52	54.1	1.199557	0.002501	0.002501	-5.99109	0.001847
12/31/51	54.2	1.201774	0.002496	0.002496	-5.99294	-0.68946
12/31/50	54.4	1.206208	0.004974	0.004974	-5.30348	-0.10863
12/31/49	48.8	1.08204	0.005545	0.005545	-5.19484	-0.5047
12/31/48	49.1	1.088692	0.009185	0.009185	-4.69015	0.364789
12/31/47	49.5	1.097561	0.006378	0.006378	-5.05494	1.949942
12/31/46	49.7	1.101996	0.000907	0.000907	-7.00488	-1.95062
12/31/45	42.4	0.940133	0.006382	0.006382	-5.05426	1.08675
12/31/44	41.9	0.929047	0.002153	0.002153	-6.14101	-1.75659
12/31/43	43.4	0.962306	0.01247	0.01247	-4.38443	-0.52145
12/31/42	36.5	0.809313	0.021005	0.021005	-3.86297	-0.48395
12/31/41	39.7	0.880266	0.034081	0.034081	-3.37903	-1.54129
12/31/40	40.8	0.904656	0.159176	0.159176	-1.83774	-0.0614
12/31/39	42.9	0.95122	0.169256	0.169256	-1.77634	1.01311
12/31/38	45.5	1.008869	0.061455	0.061455	-2.78945	0.658798
12/31/37	46.8	1.037694	0.031801	0.031801	-3.44825	0.111659
12/31/36	44.4	0.984479	0.028441	0.028441	-3.55991	0.773989
12/31/35	44.7	0.991131	0.013116	0.001982	-6.22352	0.001432
12/31/34	45.1	1	0.002	0.002	-6.21461	

Figure 70

% 1934 Insured Total Deposit Scalar Adjust d, 1934-1995					
	AdjAct\$B	Adj1972Adj\$B	AdjLNAdj\$B	AdjLNdelta	
Mean	2.450631	Mean	0.850641	Mean	-2.70751 Mean 0.057826
Standard E	0.786694	Standard E	0.246549	Standard E	0.332375 Standard E 0.192171
Median	0.036017	Median	0.034949	Median	-3.33287 Median 0.015261
Mode	#N/A	Mode	#N/A	Mode	#N/A Mode #N/A
Standard C	6.093708	Standard C	1.909761	Standard C	2.553018 Standard C 1.463533
Sample Va	37.13328	Sample Va	3.647185	Sample Va	6.517903 Sample Va 2.141927
Kurtosis	11.32783	Kurtosis	9.235564	Kurtosis	-0.97877 Kurtosis 0.700621
Skewness	3.319198	Skewness	3.020923	Skewness	0.32756 Skewness 0.130788
Range	31.24612	Range	9.373835	Range	9.336829 Range 7.58087
Minimum	0	Minimum	0	Minimum	-7.09891 Minimum -3.78419
Maximum	31.24612	Maximum	9.373835	Maximum	2.237922 Maximum 3.79668
Sum	147.0379	Sum	51.03845	Sum	-159.743 Sum 3.353905
Count	60	Count	60	Count	59 Count 58
Confidence	1.574173	Confidence	0.493344	Confidence	0.66532 Confidence 0.384816

Figure 71

Annual Year End	Actual \$B CatLoss	Adj1972 \$E CatLoss	Growth Scalar	%Growth A Cat Loss	Ln%GroAd CatLoss	delLN%Gro CatLoss	
Year End							
12/31/96	7.35	1.962379		1.91	1.027423	0.027054	-0.21464
12/31/95	8.335	2.292125		1.8	1.273403	0.241693	-0.82884
12/31/94	17.045	4.900438		1.68	2.916927	1.070531	1.048054
12/31/93	5.585	1.605688		1.57	1.022731	0.022476	-1.53635
12/31/92	22.974	6.8922		1.45	4.753241	1.558827	1.464747
12/31/91	4.711	1.472188		1.34	1.098647	0.09408	0.392908
12/31/90	2.807	0.912275		1.23	0.741687	-0.29883	-1.14194
12/31/89	7.642	2.579175		1.11	2.323581	0.84311	1.550051
12/31/88	1.409	0.49315		1	0.49315	-0.70694	

Figure 72

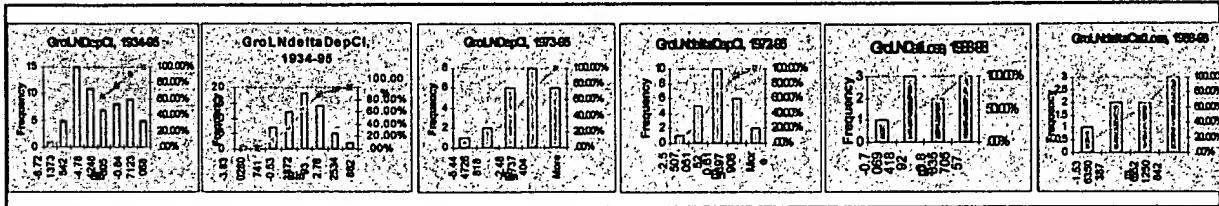


Figure 73

Annual Year End	Actual \$B FDIC			Actual \$B FDIC		
	Deposits Closed	Total Deposits		Assets Closed	Total Assets	
12/31/94	1.236	2874.4		1.392	4010.8	
12/31/93	3.132	2754.3		3.539	3706.2	
12/31/92	40.94	2698.7		44.232	3505.7	
12/31/91	53.832	2667.6		63.338	3430.6	
12/31/90	14.489	2650.1		15.365	3389.5	
12/31/89	22.28	2548.5		29.431	3299.4	
12/31/88	36.432	2431.7		52.62	3130.8	
12/31/87	8.4	2335.4		9.216	2999.9	
12/31/86	7.057	2283.5		6.813	2940.7	
12/31/85	8.059	2118.1		8.735	2730.7	
12/31/84	20.334	1962.9		36.909	2508.9	
12/31/83	5.442	1842.5		7.026	2342.1	
12/31/82	9.904	1705.7		11.632	2193.3	
12/31/81	3.826	1588.7		4.99	2028.9	
12/31/80	5.516	1481.1		8.189	1855.7	
12/31/79	0.111	1362.8		0.133	1691.8	
12/31/78	0.854	1233.4		0.994	1507.9	
12/31/77	0.205	929.2		0.233	1339.4	
12/31/76	1.235	830.9		1.039	1182.4	
12/31/75	0.34	780.7		0.42	1086.7	
12/31/74	1.576	746.4		3.823	1037.2	
12/31/73	0.971	681.7		1.31	820.4	
12/31/72	0.02	616.9		1.322	730.9	
12/31/71	0.141	539.2		0.197	633.6	
12/31/70	0.052	482.5		0.062	570.2	
12/31/69	0.04	436.9		0.044	524.6	
12/31/68	0.023	434.6		0.025	500.2	
12/31/67	0.011	395.8		0.012	450.6	
12/31/66	0.104	352.8		0.121	402.9	
12/31/65	0.044	331.5		0.059	375.4	
12/31/64	0.023	306.2		0.026	345.1	
12/31/63	0.023	274.6		0.026	311.8	
12/31/62	0.003	261.4		0	295.9	
12/31/61	0.009	247.9		0.01	277.3	
12/31/60	0.007	228.9		0.008	256.3	
12/31/59	0.003	219		0.003	243.4	
12/31/58		215.2			237.5	
12/31/57	0.011	200.5		0.011	221.5	
12/31/56	0.011	196.5		0.013	216.1	
12/31/55	0.012	190.9		0.012	209.1	
12/31/54	0.001	183.3		0.001	200.6	
12/31/53	0.044	175.1		0	191.1	
12/31/52	0.003	171.4		0.002	186.7	
12/31/51	0.003	163.2		0.003	177.5	
12/31/50	0.006	153.5		0.004	166.7	
12/31/49	0.006	143.2		0.005	155.3	
12/31/48	0.01	140.7		0.01	152.1	
12/31/47	0.007	141.9		0.007	152.7	
12/31/46	0.001	137		0.001	147.3	
12/31/45	0.006	147.8		0.008	157.5	
12/31/44	0.002	125.7		0.002	134.6	
12/31/43	0.012	104.1		0.014	112.2	
12/31/42	0.017	87.8		0	95.5	
12/31/41	0.03	69.4		0	76.8	
12/31/40	0.144	63.5		0	70.7	
12/31/39	0.161	56.1		0	63.1	
12/31/38	0.062	49.8		0.014	56.8	
12/31/37	0.033	47.2		0.019	54.2	
12/31/36	0.028	49.3		0.012	56.2	
12/31/35	0.013	44.1		0.012	50.9	
12/31/34	0.002	39		0.003	46.4	

Figure 74

Annual Year End	Closed Deposits/ Total Deposits		Closed Assets/ Total Assets	
	#/#	e^(#/#)	#/#	e^(#/#)
12/31/94	0.00043	1.00043	0.00035	1.000347
12/31/93	0.00114	1.001138	0.00095	1.000955
12/31/92	0.01517	1.015286	0.01262	1.012697
12/31/91	0.02018	1.020385	0.01846	1.018634
12/31/90	0.00547	1.005482	0.00453	1.004543
12/31/89	0.00874	1.008781	0.00892	1.00896
12/31/88	0.01498	1.015095	0.01681	1.016949
12/31/87	0.00360	1.003603	0.00307	1.003077
12/31/86	0.00309	1.003095	0.00232	1.002319
12/31/85	0.00380	1.003812	0.00320	1.003204
12/31/84	0.01036	1.010413	0.01471	1.01482
12/31/83	0.00295	1.002958	0.00300	1.003004
12/31/82	0.00581	1.005823	0.00530	1.005318
12/31/81	0.00241	1.002411	0.00246	1.002462
12/31/80	0.00372	1.003731	0.00441	1.004423
12/31/79	0.00008	1.000081	0.00008	1.000079
12/31/78	0.00069	1.000693	0.00066	1.000659
12/31/77	0.00022	1.000221	0.00017	1.000174
12/31/76	0.00149	1.001487	0.00088	1.000879
12/31/75	0.00044	1.000436	0.00039	1.000387
12/31/74	0.00211	1.002114	0.00369	1.003693
12/31/73	0.00142	1.001425	0.00160	1.001598
12/31/72	0.00003	1.000032	0.00181	1.00181
12/31/71	0.00026	1.000262	0.00031	1.000311
12/31/70	0.00011	1.000108	0.00011	1.000109
12/31/69	0.00009	1.000092	0.00008	1.000084
12/31/68	0.00005	1.000053	0.00005	1.00005
12/31/67	0.00003	1.000028	0.00003	1.000027
12/31/66	0.00029	1.000295	0.00030	1.0003
12/31/65	0.00013	1.000133	0.00016	1.000157
12/31/64	0.00008	1.000075	0.00008	1.000075
12/31/63	0.00008	1.000084	0.00008	1.000083
12/31/62	0.00001	1.000011	0.00000	1
12/31/61	0.00004	1.000036	0.00004	1.000036
12/31/60	0.00003	1.000031	0.00003	1.000031
12/31/59	0.00001	1.000014	0.00001	1.000012
12/31/58	0.00000	1	0.00000	1
12/31/57	0.00005	1.000055	0.00005	1.00005
12/31/56	0.00006	1.000056	0.00006	1.00006
12/31/55	0.00006	1.000063	0.00006	1.000057
12/31/54	0.00001	1.000005	0.00000	1.000005
12/31/53	0.00025	1.000251	0.00000	1
12/31/52	0.00002	1.000018	0.00001	1.000011
12/31/51	0.00002	1.000018	0.00002	1.000017
12/31/50	0.00004	1.000039	0.00002	1.000024
12/31/49	0.00004	1.000042	0.00003	1.000032
12/31/48	0.00007	1.000071	0.00007	1.000066
12/31/47	0.00005	1.000049	0.00005	1.000046
12/31/46	0.00001	1.000007	0.00001	1.000007
12/31/45	0.00004	1.000041	0.00004	1.000038
12/31/44	0.00002	1.000016	0.00001	1.000015
12/31/43	0.00012	1.000115	0.00012	1.000125
12/31/42	0.00019	1.000194	0.00000	1
12/31/41	0.00043	1.000432	0.00000	1
12/31/40	0.00227	1.00227	0.00000	1
12/31/39	0.00287	1.002874	0.00000	1
12/31/38	0.00124	1.001246	0.00025	1.000247
12/31/37	0.00070	1.000699	0.00035	1.000351
12/31/36	0.00057	1.000568	0.00021	1.000214
12/31/35	0.00029	1.000295	0.00024	1.000236
12/31/34	0.00005	1.000051	0.00006	1.000065

Figure 75

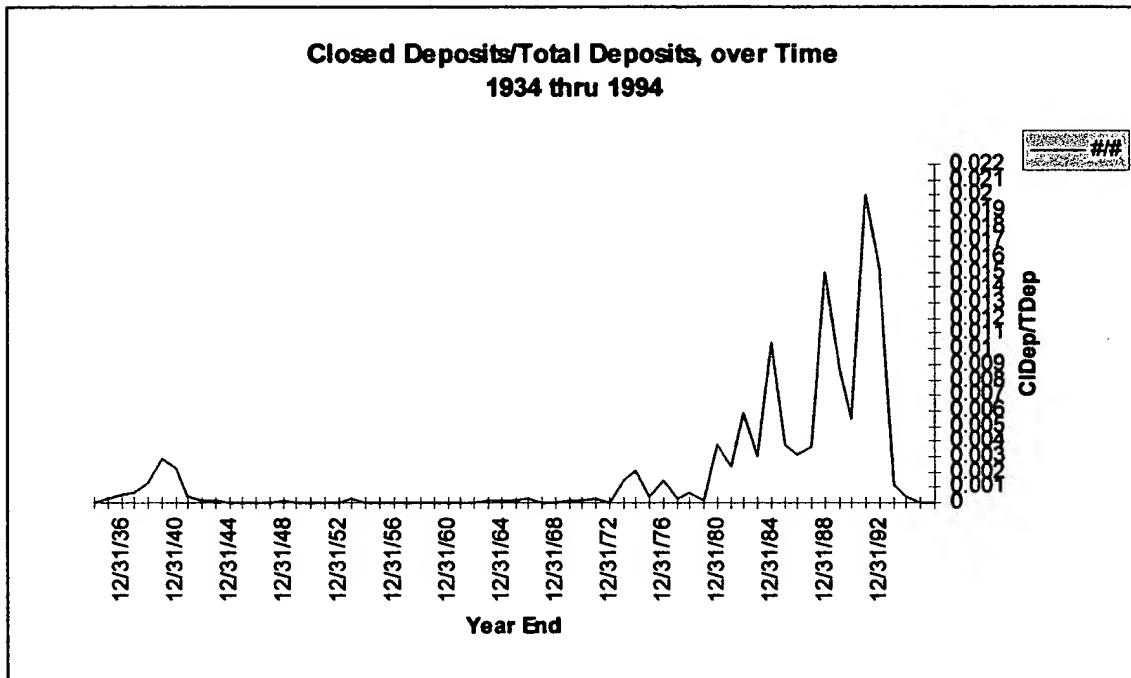


Figure 76

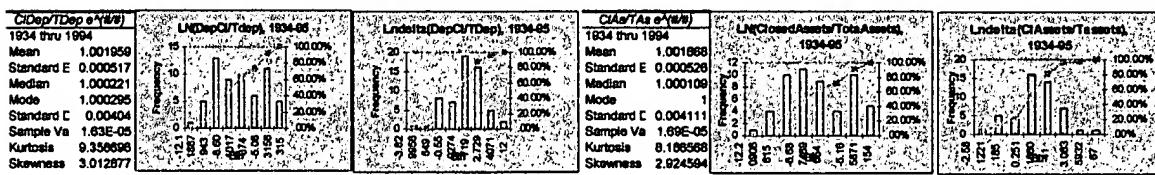


Figure 77

Annual Year End	FDIC Total Deposits	Interest- Bearing (IB) Deposits	FDIC Total Assets	Interest- Bearing(IB) Assets	Interest- Bearing(IB) Liabilities
12/31/94	2874.4	2302	4010.8	3566.6	3023.8
12/31/93	2754.3	2182	3706.2	3290.8	2717.5
12/31/92	2698.7	2157	3505.7	3087.9	2598.3
12/31/91	2667.6	2207	3430.6	3011.1	2611.9
12/31/90	2650.1	2161	3389.5	2956.3	2570.7
12/31/89	2548.5	2065	3299.4	2887.9	2503.9
12/31/88	2431.7	1952	3130.8	2734.5	2350.5
12/31/87	2335.4	1857	2999.9	2627	2237.2
12/31/86	2283.5	1751	2940.7	2548.6	2127
12/31/85	2118.1	1646	2730.7	2362.7	1981.9
12/31/84	1962.9	1531	2508.9	2157	1803
12/31/83	1842.5	1451	2342.1	2005.7	1696.4
12/31/82	1705.7	1335	2193.3	1880.2	1580.4
12/31/81	1588.7	1205	2028.9	1725.5	1422.9
12/31/80	1481.1	1049	1855.7	1551.9	1233.9
12/31/79	1362.8	932	1691.8	1405.9	1092.6
12/31/78	1233.4	834	1507.9	1257.3	966.8
12/31/77	929.2	550	1339.4	1131.2	841.2
12/31/76	830.9	497	1182.4	1013.9	743.9
12/31/75	780.7	459	1086.7	920.7	660.2
12/31/74	746.4	432	1037.2	869	621.3
12/31/73	681.7	373	820.4	673.6	434.9
12/31/72	616.9	320	730.9	595	363.4
12/31/71	539.2	277	633.6	513.7	306.2
12/31/70	482.5	236	570.2	456.9	257.3
12/31/69	436.9	197	524.6	416.3	217.5
12/31/68	434.6	206	500.2	401.7	216.7
12/31/67	395.8	185	450.6	360.7	192.9
12/31/66	352.8	161	402.9	323.2	167.6
12/31/65	331.5	148	375.4	305.5	153.7
12/31/64	306.2	127	345.1	276.9	130.9
12/31/63	274.6	111.7	311.8	254.1	115.4
12/31/62	261.4	98.2	295.9	235.4	101.8
12/31/61	247.9	82.8	277.3	214.8	83.3
12/31/60	228.9	73.3	256.3	198.7	73.5
12/31/59	219	67.5	243.4	189.4	68.1
12/31/58	215.2	65.7	237.5	184.4	65.8
12/31/57	200.5	57.6	221.5	169.2	57.8
12/31/56	196.5	52.1	216.1	164.2	52.2
12/31/55	190.9	49.9	209.1	159.7	50.1
12/31/54	183.3	48.5	200.6	154.6	48.6
12/31/53	175.1	44.8	191.1	144.2	44.9
12/31/52	171.4	41.4	186.7	140.2	41.6
12/31/51	163.2	38.3	177.5	131.1	38.3
12/31/50	153.5	36.5	166.7	125.2	36.6
12/31/49	143.2	36	155.3	118.4	36
12/31/48	140.7	35.5	152.1	112.4	35.6
12/31/47	141.9	34.9	152.7	114.4	35
12/31/46	137	33.6	147.3	112.3	33.7
12/31/45	147.8	29.9	157.5	121.9	30.2
12/31/44	125.7	23.9	134.6	103.5	24.1
12/31/43	104.1	19.2	112.2	83.6	19.2
12/31/42	87.8	16.3	95.5	66.4	16.3
12/31/41	69.4	15.9	76.8	49.5	15.9
12/31/40	63.5	15.7	70.7	42.7	15.8
12/31/39	56.1	15.2	63.1	39.5	15.3
12/31/38	49.8	14.8	56.8	37.7	14.9
12/31/37	47.2	14.8	54.2	37.4	14.9
12/31/36	49.3	14.1	56.2	38.5	14.2
12/31/35	44.1	13.4	50.9	35.1	13.4
12/31/34	39	12.7	46.4	33.1	12.8

Figure 78

Annual Year End	TD/TA	Ratios of Deposits versus Assets and Liabilities				
		IBD/IBA	IBD/IBL	TD/IBA	TD/IBL	IBA/IBL
12/31/94	0.717	0.645	0.761	0.806	0.951	1.180
12/31/93	0.743	0.663	0.803	0.837	1.014	1.211
12/31/92	0.770	0.699	0.830	0.874	1.039	1.188
12/31/91	0.778	0.733	0.845	0.886	1.021	1.153
12/31/90	0.782	0.731	0.841	0.896	1.031	1.150
12/31/89	0.772	0.715	0.825	0.882	1.018	1.153
12/31/88	0.777	0.714	0.830	0.889	1.035	1.163
12/31/87	0.778	0.707	0.830	0.889	1.044	1.174
12/31/86	0.777	0.687	0.823	0.896	1.074	1.198
12/31/85	0.776	0.697	0.831	0.896	1.069	1.192
12/31/84	0.782	0.710	0.849	0.910	1.089	1.196
12/31/83	0.787	0.723	0.855	0.919	1.086	1.182
12/31/82	0.778	0.710	0.845	0.907	1.079	1.190
12/31/81	0.783	0.698	0.847	0.921	1.117	1.213
12/31/80	0.798	0.676	0.850	0.954	1.200	1.258
12/31/79	0.806	0.663	0.853	0.969	1.247	1.287
12/31/78	0.818	0.663	0.863	0.981	1.276	1.300
12/31/77	0.694	0.486	0.654	0.821	1.105	1.345
12/31/76	0.703	0.490	0.668	0.820	1.117	1.363
12/31/75	0.718	0.499	0.695	0.848	1.183	1.395
12/31/74	0.720	0.497	0.695	0.859	1.201	1.399
12/31/73	0.831	0.554	0.858	1.012	1.567	1.549
12/31/72	0.844	0.538	0.881	1.037	1.698	1.637
12/31/71	0.851	0.539	0.905	1.050	1.761	1.678
12/31/70	0.846	0.517	0.917	1.056	1.875	1.776
12/31/69	0.833	0.473	0.906	1.049	2.009	1.914
12/31/68	0.869	0.513	0.951	1.082	2.006	1.854
12/31/67	0.878	0.513	0.959	1.097	2.052	1.870
12/31/66	0.876	0.498	0.961	1.092	2.105	1.928
12/31/65	0.883	0.484	0.963	1.085	2.157	1.988
12/31/64	0.887	0.459	0.970	1.106	2.339	2.115
12/31/63	0.881	0.440	0.968	1.081	2.380	2.202
12/31/62	0.883	0.417	0.965	1.110	2.568	2.312
12/31/61	0.894	0.385	0.994	1.154	2.976	2.579
12/31/60	0.893	0.369	0.997	1.152	3.114	2.703
12/31/59	0.900	0.356	0.991	1.156	3.216	2.781
12/31/58	0.906	0.356	0.998	1.167	3.271	2.802
12/31/57	0.905	0.340	0.997	1.185	3.469	2.927
12/31/56	0.909	0.317	0.998	1.197	3.764	3.146
12/31/55	0.913	0.312	0.996	1.195	3.810	3.188
12/31/54	0.914	0.314	0.998	1.186	3.772	3.181
12/31/53	0.916	0.311	0.998	1.214	3.900	3.212
12/31/52	0.918	0.295	0.995	1.223	4.120	3.370
12/31/51	0.919	0.292	1.000	1.245	4.261	3.423
12/31/50	0.921	0.292	0.997	1.226	4.194	3.421
12/31/49	0.922	0.304	1.000	1.209	3.978	3.289
12/31/48	0.925	0.316	0.997	1.252	3.952	3.157
12/31/47	0.929	0.305	0.997	1.240	4.054	3.269
12/31/46	0.930	0.299	0.997	1.220	4.065	3.332
12/31/45	0.938	0.245	0.990	1.212	4.894	4.036
12/31/44	0.934	0.231	0.992	1.214	5.216	4.295
12/31/43	0.928	0.230	1.000	1.245	5.422	4.354
12/31/42	0.919	0.245	1.000	1.322	5.387	4.074
12/31/41	0.904	0.321	1.000	1.402	4.365	3.113
12/31/40	0.898	0.368	0.994	1.487	4.019	2.703
12/31/39	0.889	0.385	0.993	1.420	3.667	2.582
12/31/38	0.877	0.393	0.993	1.321	3.342	2.530
12/31/37	0.871	0.396	0.993	1.262	3.168	2.510
12/31/36	0.877	0.366	0.993	1.281	3.472	2.711
12/31/35	0.866	0.382	1.000	1.256	3.291	2.619
12/31/34	0.841	0.384	0.992	1.178	3.047	2.586

Figure 79

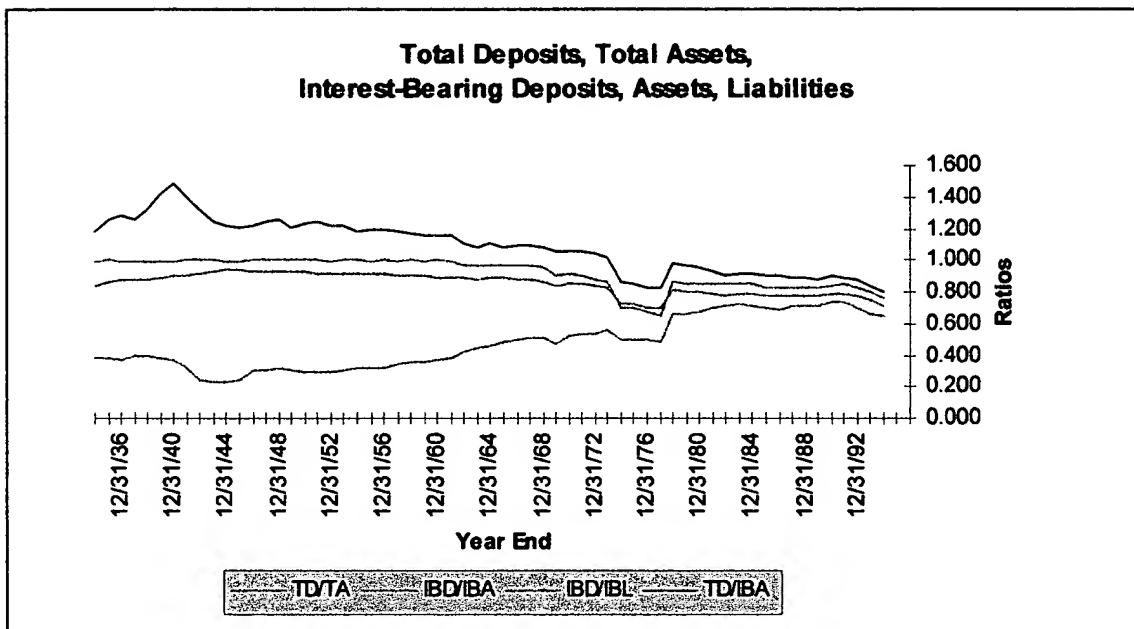


Figure 80

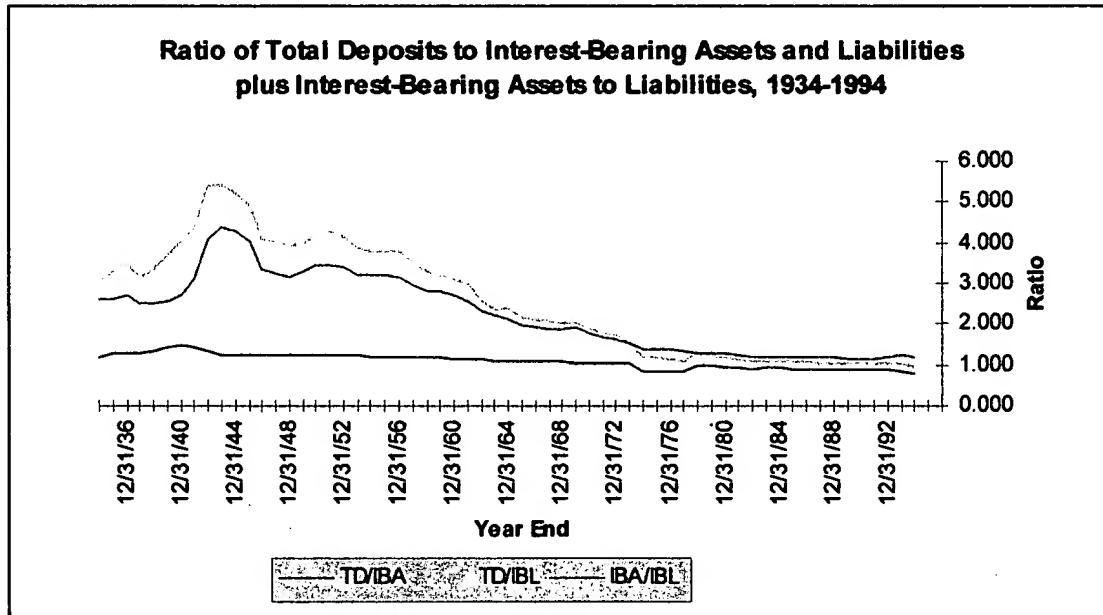


Figure 81

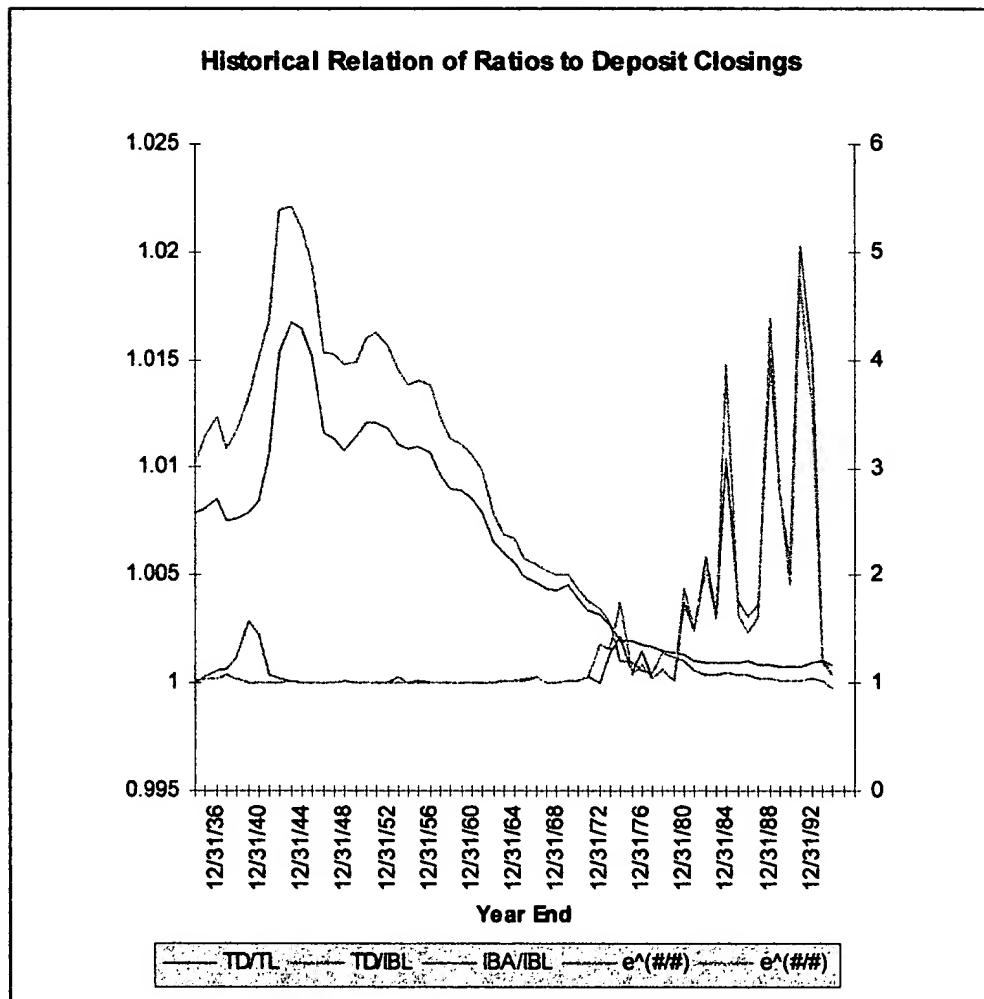


Figure 82

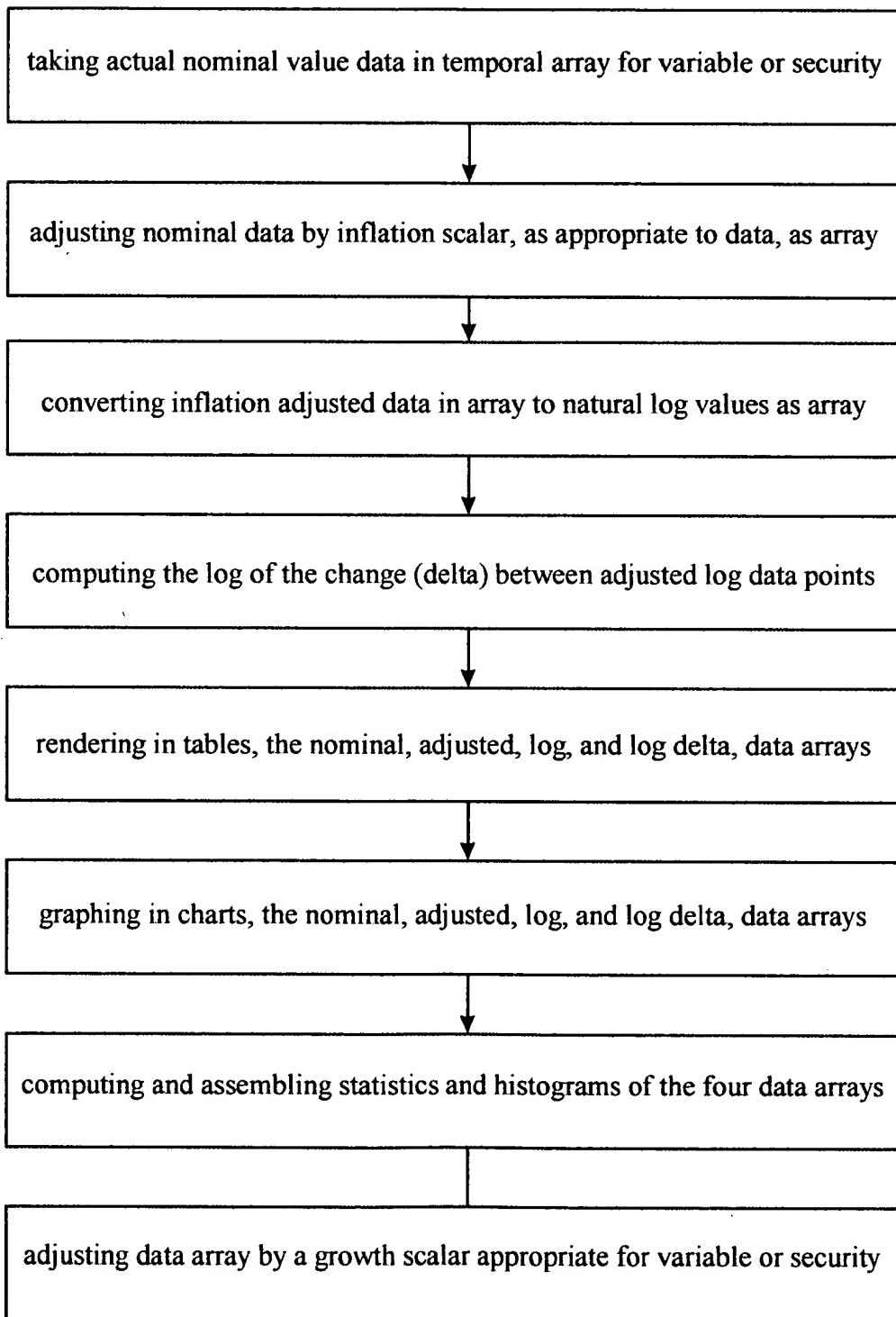


Figure 83

10 Sequences of Independent Uniform Random Variables on (0,1) Each Sequence with Different Seed Clock Rate										
0.382	0.655507	0.894681	0.670064	0.267006	0.436171	0.672079	0.682669	0.817438	0.922178	
0.100681	0.01825	0.803186	0.609638	0.456893	0.46028	0.326518	0.770135	0.326426	0.697958	
0.596484	0.54442	0.608997	0.666982	0.136814	0.106754	0.822169	0.469069	0.421735	0.396039	
0.899106	0.208106	0.477767	0.745323	0.523515	0.135258	0.938231	0.353069	0.620075	0.492477	
0.88461	0.734306	0.8717	0.62392	0.058046	0.272378	0.341227	0.664327	0.019074	0.329875	
0.958464	0.372997	0.612537	0.552904	0.94821	0.313913	0.698569	0.623615	0.999817	0.841304	
0.014496	0.998077	0.352062	0.854305	0.563677	0.968749	0.967925	0.218543	0.545366	0.524918	
0.407422	0.420728	0.557237	0.837062	0.05829	0.751366	0.514237	0.059633	0.882534	0.454726	
0.863247	0.994873	0.240364	0.2725	0.45497	0.40611	0.176885	0.025178	0.138371	0.320322	
0.138585	0.038575	0.085757	0.181555	0.411969	0.20304	0.689779	0.061922	0.501938	0.466964	
0.245033	0.231605	0.99353	0.207984	0.234107	0.721549	0.931394	0.452071	0.718406	0.171087	
0.045473	0.312296	0.053133	0.168188	0.785485	0.359416	0.517777	0.379711	-0.54564	0.003143	
0.03238	0.694113	0.681448	0.768456	0.286569	0.601428	0.369366	0.005127	0.940367	0.044099	
0.164129	0.367962	0.407544	0.227638	0.192389	0.701071	0.848903	0.295785	0.708365	0.69808	
0.219611	0.315806	0.798059	0.462203	0.123966	0.547655	0.207404	0.246956	0.303262	0.741264	
0.01709	0.782281	0.214637	0.245766	0.252541	0.203711	0.540849	0.452803	0.055757	0.090121	
0.285043	0.298135	0.817225	0.962249	0.984985	0.250984	0.41258	0.570788	0.984924	0.627155	
0.343089	0.969085	0.102298	0.524979	0.268868	0.753685	0.383984	0.769463	0.742454	0.707907	
0.553636	0.907682	0.519089	0.459639	0.967345	0.739494	0.601978	0.737815	0.019898	0.561663	
0.357372	0.916715	0.301584	0.009033	0.740349	0.518754	0.375134	0.973327	0.48207	0.698263	
0.371838	0.877468	0.8081	0.134159	0.759117	0.816034	0.803034	0.844569	0.877529	0.73748	
0.355602	0.144566	0.368755	0.438093	0.36079	0.983489	0.690939	0.999145	0.848933	0.145451	
0.910306	0.056795	0.019898	0.989959	0.067537	0.910184	0.771722	0.225929	0.451277	0.226936	

Figure 84

Numeric Output of Box-Muller Transformation on Uniform R.V. Sample Sequences									
Ten Uniform Sampling Sequences, each separately seeded; made standard normal by Box-Muller Method:									
Box-Muller: Standard Normal Random Variable V1 = SQRT(-2*LN(U(la))) * COS(2*PI()*(U(lb)))									
Box-Muller: Standard Normal Random Variable V2 = SQRT(-2*LN(U(la))) * SIN(2*PI()*(U(lb)))									
Pair A:		Pair B:		Pair C:		Pair D:		Pair E:	
V1	V2	V1	V2	V1	V2	V1	V2	V1	V2
-0.77614	0.62068	-0.22712	-0.41352	-1.49615	0.634424	-0.366	-0.8129	0.560542	-0.29825
2.128731	1.673026	-0.51109	-0.42086	-1.21287	0.30914	0.18877	-1.48422	-0.48062	-1.41708
-0.97723	-0.62832	-0.49626	-0.86349	1.562444	1.239769	-0.61401	0.120856	-1.04354	0.798606
0.120006	-1.04951	-0.03572	-1.2149	0.750996	0.854626	-0.21543	0.284799	-0.97657	0.046197
-0.04875	-0.52118	-0.37306	-0.36803	-0.33437	2.362462	-0.75181	-1.25905	-1.35373	2.467037
-0.20336	-0.36238	-0.9359	-0.32308	-0.12747	0.300181	-0.60412	-0.5937	0.010386	-0.01607
2.909723	0.005643	0.880622	-1.1456	1.050193	-0.20891	0.050141	0.250374	-1.08771	-0.1717
-1.17726	0.722988	0.562509	-0.92364	0.020449	-2.38416	1.073304	0.422092	-0.47982	0.1403
0.542037	-0.07679	-0.23791	1.671706	-1.04289	0.698167	1.838077	0.293227	-0.85046	1.797873
1.929991	1.951441	0.92407	2.014589	0.387277	1.274217	0.797428	0.326918	-1.14892	0.241972
0.193411	1.70956	0.029731	0.109991	-0.30301	-1.67694	-0.36005	0.111832	0.386931	0.71535
-0.94849	0.429991	1.191293	2.109679	-0.44099	0.537062	-0.83496	0.786935	1.100508	0.021739
-0.90097	0.17266	0.101332	-0.86994	-1.27067	-0.94072	1.410628	0.045458	0.337296	0.095927
-1.28354	1.213177	0.187642	1.326651	-0.54943	-1.73049	-0.1624	0.54886	-0.26612	-0.78662
-0.69959	1.490714	-0.65282	0.15802	-1.95249	-0.60273	0.033927	1.773422	-0.08476	-1.54244
0.574655	0.075106	0.046672	1.753693	0.475742	1.589351	-1.06031	0.323988	2.027779	1.289033
-0.47191	1.51821	0.617569	-0.1493	-0.00108	0.173945	-1.2012	-0.57252	-0.12157	-0.12491
1.435203	0.208953	-2.10911	-0.33376	0.037519	-1.62039	0.168773	-1.37325	-0.20174	-0.74491
0.909556	-0.14554	-1.10852	0.287302	-0.017	-0.25712	-0.07706	-1.00456	-2.59152	-1.05749
1.242578	0.325676	1.545865	0.087836	-0.77004	-0.09116	1.380717	-0.2336	-0.38582	-1.14476
1.009935	0.368658	0.434281	0.487381	0.299273	-0.67944	0.370814	-0.54883	-0.04017	-0.50958
0.884465	1.549458	-1.30701	0.535688	1.42023	-0.14787	0.859876	-0.00462	0.349495	0.453213
0.406218	-1.27949	2.793407	-0.17648	1.961681	-1.24175	0.108469	0.711686	0.182174	1.248263

Figure 85

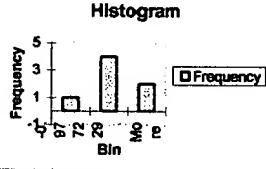
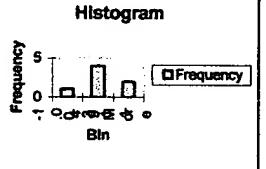
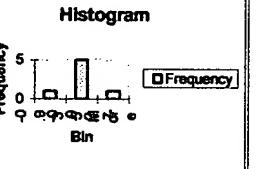
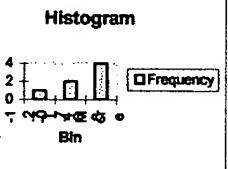
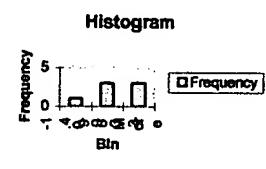
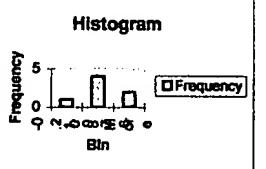
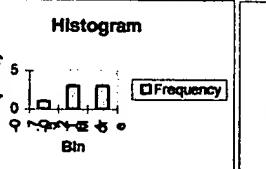
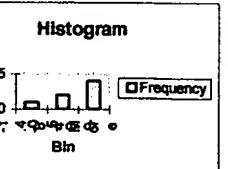
Descriptive Statistics of Small Samples							
Pair A, V1		Pair A, V2		Pair B, V1		Pair B, V2	
Mean	0.450426	Mean	-0.03743	Mean	-0.24265	Mean	-0.6785
Standard E	0.56047	Standard E	0.347565	Standard E	0.214852	Standard E	0.14634
Median	-0.04875	Median	-0.36238	Median	-0.37306	Median	-0.42086
Mode	#N/A	Mode	#N/A	Mode	#N/A	Mode	#N/A
Standard C	1.482863	Standard C	0.919572	Standard C	0.568446	Standard C	0.387178
Sample Va	2.198883	Sample Va	0.845612	Sample Va	0.323131	Sample Va	0.149907
Kurtosis	-0.45948	Kurtosis	1.115894	Kurtosis	2.798664	Kurtosis	-1.94966
Skewness	1.030931	Skewness	1.169931	Skewness	1.340268	Skewness	-0.6113
Range	3.886953	Range	2.722531	Range	1.816522	Range	0.89182
Minimum	-0.97723	Minimum	-1.04951	Minimum	-0.9359	Minimum	-1.2149
Maximum	2.909723	Maximum	1.873026	Maximum	0.880622	Maximum	-0.32308
Sum	3.15298	Sum	-0.26203	Sum	-1.69853	Sum	-4.74948
Count	7	Count	7	Count	7	Count	7
Confidence	1.371421	Confidence	0.850463	Confidence	0.525725	Confidence	0.35808
Bin Frequency		Bin Frequency		Bin Frequency		Bin Frequency	
-0.97723	1	-1.04951	1	-0.9359	1	-1.2149	1
0.966247	4	0.31176	4	-0.02764	5	-0.76899	2
More	2	More	2	More	1	More	4
							
Pair C, V1		Pair C, V2		Pair D, V1		Pair D, V2	
Mean	0.027538	Mean	0.784528	Mean	-0.33035	Mean	-0.49912
Standard E	0.434807	Standard E	0.315174	Standard E	0.134876	Standard E	0.278713
Median	-0.12747	Median	0.634424	Median	-0.366	Median	-0.5937
Mode	#N/A	Mode	#N/A	Mode	#N/A	Mode	#N/A
Standard C	1.150391	Standard C	0.833873	Standard C	0.35632	Standard C	0.732114
Sample Va	1.323399	Sample Va	0.685344	Sample Va	0.126964	Sample Va	0.535992
Kurtosis	-1.48493	Kurtosis	1.668062	Kurtosis	-1.42221	Kurtosis	-1.94667
Skewness	-0.06633	Skewness	1.134284	Skewness	0.403595	Skewness	-0.16976
Range	3.058598	Range	2.571371	Range	0.940578	Range	1.769019
Minimum	-1.49815	Minimum	-0.20891	Minimum	-0.75181	Minimum	-1.48422
Maximum	1.562444	Maximum	2.362462	Maximum	0.18877	Maximum	0.284799
Sum	0.192768	Sum	5.491694	Sum	-2.31247	Sum	-3.49383
Count	7	Count	7	Count	7	Count	7
Confidence	1.063935	Confidence	0.771205	Confidence	0.329541	Confidence	0.677093
Bin Frequency		Bin Frequency		Bin Frequency		Bin Frequency	
-1.49815	1	-0.20891	1	-0.75181	1	-1.48422	1
0.033146	3	1.076777	4	-0.28152	3	-0.59971	2
More	3	More	2	More	3	More	4
							

Figure 86

Descriptive Statistics of Small Samples							
Pair A, V1		Pair A, V2		Pair B, V1		Pair B, V2	
Mean	0.053905	Mean	0.490114	Mean	0.027154	Mean	0.056505
Standard E	0.337076	Standard E	0.245419	Standard E	0.161223	Standard E	0.299086
Median	-0.20336	Median	0.429991	Median	-0.03572	Median	-0.36803
Mode	#N/A	Mode	#N/A	Mode	#N/A	Mode	#N/A
Standard E	1.305488	Standard E	0.950502	Standard E	0.824414	Standard E	1.158353
Sample Va	1.704299	Sample Va	0.903455	Sample Va	0.389893	Sample Va	1.341782
Kurtosis	0.269906	Kurtosis	-1.22001	Kurtosis	-0.61389	Kurtosis	-0.77163
Skewness	1.13703	Skewness	0.091504	Skewness	0.498485	Skewness	0.836512
Range	4.193263	Range	3.000946	Range	2.127194	Range	3.324581
Minimum	-1.28354	Minimum	-1.04951	Minimum	-0.9359	Minimum	-1.2149
Maximum	2.909723	Maximum	1.951441	Maximum	1.191293	Maximum	2.109879
Sum	0.808576	Sum	7.351708	Sum	0.407317	Sum	0.847575
Count	15	Count	15	Count	15	Count	15
Confidence	0.722956	Confidence	0.526371	Confidence	0.34579	Confidence	0.641475
Bin Frequency		Bin Frequency		Bin Frequency		Bin Frequency	
-1.28354	1	-1.04951	1	-0.9359	1	-1.2149	1
0.114214	8	-0.04919	4	-0.22684	6	-0.10671	8
1.511969	3	0.951125	5	0.482229	4	1.001485	2
More	3	More	5	More	4	More	4
Histogram		Histogram		Histogram		Histogram	
Pair C, V1		Pair C, V2		Pair D, V1		Pair D, V2	
Mean	-0.3306	Mean	0.044406	Mean	0.098899	Mean	0.054328
Standard E	0.254102	Standard E	0.335159	Standard E	0.211453	Standard E	0.211194
Median	-0.33437	Median	0.30914	Median	-0.1624	Median	0.250374
Mode	#N/A	Mode	#N/A	Mode	#N/A	Mode	#N/A
Standard E	0.984133	Standard E	1.298064	Standard E	0.818953	Standard E	0.817952
Sample Va	0.968518	Sample Va	1.68497	Sample Va	0.670684	Sample Va	0.669046
Kurtosis	-0.42573	Kurtosis	-0.33929	Kurtosis	-0.07014	Kurtosis	0.75619
Skewness	0.290784	Skewness	-0.34152	Skewness	0.960032	Skewness	-0.17069
Range	3.514931	Range	4.746622	Range	2.673034	Range	3.257642
Minimum	-1.95249	Minimum	-2.38416	Minimum	-0.83496	Minimum	-1.48422
Maximum	1.562444	Maximum	2.362462	Maximum	1.838077	Maximum	1.773422
Sum	-4.95898	Sum	0.666088	Sum	1.483486	Sum	0.814913
Count	15	Count	15	Count	15	Count	15
Confidence	0.544995	Confidence	0.718844	Confidence	0.453522	Confidence	0.452987
Bin Frequency		Bin Frequency		Bin Frequency		Bin Frequency	
-1.95249	1	-2.38416	1	-0.83498	1	-1.48422	1
-0.78084	4	-0.80195	3	0.056054	9	-0.39834	3
0.390801	7	0.780255	7	0.947065	2	0.687541	9
More	3	More	4	More	3	More	2
Histogram		Histogram		Histogram		Histogram	

Figure 87

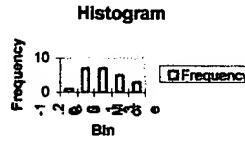
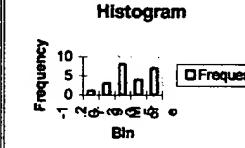
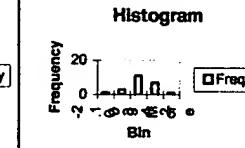
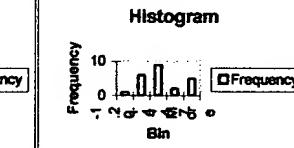
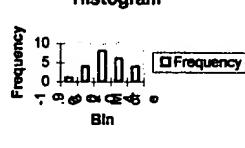
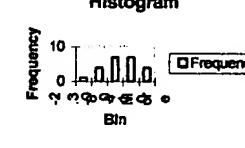
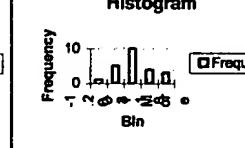
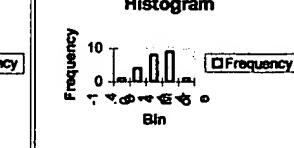
Descriptive Statistics of Small Samples																																																							
Pair A, V1		Pair A, V2		Pair B, V1		Pair B, V2																																																	
Mean	0.295621	Mean	0.433597	Mean	0.057412	Mean	0.145215																																																
Standard E	0.238759	Standard E	0.191837	Standard E	0.215708	Standard E	0.209474																																																
Median	0.193411	Median	0.325676	Median	0.029731	Median	-0.1493																																																
Mode	#N/A	Mode	#N/A	Mode	#N/A	Mode	#N/A																																																
Standard C	1.145049	Standard C	0.919059	Standard C	1.0345	Standard C	1.0046																																																
Sample Va	1.311138	Sample Va	0.844869	Sample Va	1.07019	Sample Va	1.009221																																																
Kurtosis	-0.3689	Kurtosis	-0.85548	Kurtosis	1.374238	Kurtosis	-0.4539																																																
Skewness	0.526821	Skewness	0.031131	Skewness	0.480699	Skewness	0.729685																																																
Range	4.193263	Range	3.23093	Range	4.902513	Range	3.324581																																																
Minimum	-1.28354	Minimum	-1.27949	Minimum	-2.10911	Minimum	-1.2149																																																
Maximum	2.909723	Maximum	1.951441	Maximum	2.793407	Maximum	2.109679																																																
Sum	6.799279	Sum	9.87274	Sum	1.320471	Sum	3.339934																																																
Count	23	Count	23	Count	23	Count	23																																																
Confidence	0.495157	Confidence	0.397431	Confidence	0.447352	Confidence	0.434422																																																
<table border="1"> <thead> <tr> <th>Bin</th><th>Frequency</th></tr> </thead> <tbody> <tr> <td>-1.28354</td><td>1</td></tr> <tr> <td>-0.23522</td><td>7</td></tr> <tr> <td>0.8113092</td><td>7</td></tr> <tr> <td>1.861407</td><td>5</td></tr> <tr> <td>More</td><td>3</td></tr> </tbody> </table>		Bin	Frequency	-1.28354	1	-0.23522	7	0.8113092	7	1.861407	5	More	3	<table border="1"> <thead> <tr> <th>Bin</th><th>Frequency</th></tr> </thead> <tbody> <tr> <td>-1.27949</td><td>1</td></tr> <tr> <td>-0.47176</td><td>3</td></tr> <tr> <td>0.335978</td><td>8</td></tr> <tr> <td>1.143708</td><td>4</td></tr> <tr> <td>More</td><td>7</td></tr> </tbody> </table>		Bin	Frequency	-1.27949	1	-0.47176	3	0.335978	8	1.143708	4	More	7	<table border="1"> <thead> <tr> <th>Bin</th><th>Frequency</th></tr> </thead> <tbody> <tr> <td>-2.10911</td><td>1</td></tr> <tr> <td>-0.88348</td><td>3</td></tr> <tr> <td>0.34215</td><td>11</td></tr> <tr> <td>1.567778</td><td>7</td></tr> <tr> <td>More</td><td>1</td></tr> </tbody> </table>		Bin	Frequency	-2.10911	1	-0.88348	3	0.34215	11	1.567778	7	More	1	<table border="1"> <thead> <tr> <th>Bin</th><th>Frequency</th></tr> </thead> <tbody> <tr> <td>-1.2149</td><td>1</td></tr> <tr> <td>-0.38378</td><td>6</td></tr> <tr> <td>0.447388</td><td>9</td></tr> <tr> <td>1.278534</td><td>2</td></tr> <tr> <td>More</td><td>5</td></tr> </tbody> </table>		Bin	Frequency	-1.2149	1	-0.38378	6	0.447388	9	1.278534	2	More	5
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Pair C, V1		Pair C, V2		Pair D, V1		Pair D, V2																																																	
Mean	-0.06751	Mean	-0.06993	Mean	0.088416	Mean	-0.08203																																																
Standard E	0.207898	Standard E	0.246872	Standard E	0.170752	Standard E	0.163013																																																
Median	-0.017	Median	-0.09116	Median	0.033927	Median	0.111832																																																
Mode	#N/A	Mode	#N/A	Mode	#N/A	Mode	#N/A																																																
Standard C	0.997033	Standard C	1.182995	Standard C	0.818899	Standard C	0.781785																																																
Sample Va	0.994075	Sample Va	1.399478	Sample Va	0.670595	Sample Va	0.611188																																																
Kurtosis	-0.25888	Kurtosis	-0.3547	Kurtosis	-0.39191	Kurtosis	0.205099																																																
Skewness	0.19592	Skewness	-0.05823	Skewness	0.513887	Skewness	0.014878																																																
Range	3.914167	Range	4.748622	Range	3.039275	Range	3.257842																																																
Minimum	-1.95249	Minimum	-2.38416	Minimum	-1.2012	Minimum	-1.48422																																																
Maximum	1.981681	Maximum	2.362462	Maximum	1.838077	Maximum	1.773422																																																
Sum	-1.55264	Sum	-1.60834	Sum	2.033562	Sum	-1.88678																																																
Count	23	Count	23	Count	23	Count	23																																																
Confidence	0.43115	Confidence	0.511566	Confidence	0.354119	Confidence	0.33807																																																
<table border="1"> <thead> <tr> <th>Bin</th><th>Frequency</th></tr> </thead> <tbody> <tr> <td>-1.95249</td><td>1</td></tr> <tr> <td>-0.97394</td><td>4</td></tr> <tr> <td>0.04597</td><td>8</td></tr> <tr> <td>0.983139</td><td>6</td></tr> <tr> <td>More</td><td>4</td></tr> </tbody> </table>		Bin	Frequency	-1.95249	1	-0.97394	4	0.04597	8	0.983139	6	More	4	<table border="1"> <thead> <tr> <th>Bin</th><th>Frequency</th></tr> </thead> <tbody> <tr> <td>-2.38418</td><td>1</td></tr> <tr> <td>-1.1975</td><td>4</td></tr> <tr> <td>-0.01085</td><td>7</td></tr> <tr> <td>1.175807</td><td>7</td></tr> <tr> <td>More</td><td>4</td></tr> </tbody> </table>		Bin	Frequency	-2.38418	1	-1.1975	4	-0.01085	7	1.175807	7	More	4	<table border="1"> <thead> <tr> <th>Bin</th><th>Frequency</th></tr> </thead> <tbody> <tr> <td>-1.2012</td><td>1</td></tr> <tr> <td>-0.44138</td><td>5</td></tr> <tr> <td>0.318439</td><td>10</td></tr> <tr> <td>1.078258</td><td>4</td></tr> <tr> <td>More</td><td>3</td></tr> </tbody> </table>		Bin	Frequency	-1.2012	1	-0.44138	5	0.318439	10	1.078258	4	More	3	<table border="1"> <thead> <tr> <th>Bin</th><th>Frequency</th></tr> </thead> <tbody> <tr> <td>-1.48422</td><td>1</td></tr> <tr> <td>-0.66981</td><td>4</td></tr> <tr> <td>0.144601</td><td>8</td></tr> <tr> <td>0.959011</td><td>9</td></tr> <tr> <td>More</td><td>1</td></tr> </tbody> </table>		Bin	Frequency	-1.48422	1	-0.66981	4	0.144601	8	0.959011	9	More	1
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Figure 88

<i>PairA, V1</i>	<i>PairA, V2</i>	<i>PairB, V1</i>	<i>PairB, V2</i>
Mean 0.029718	Mean 0.25206	Mean 0.107852	Mean 0.017778
Standard E 0.158592	Standard E 0.137522	Standard E 0.145238	Standard E 0.146055
Median 0.065401	Median 0.190806	Median 0.100486	Median -0.1503
Mode #N/A	Mode #N/A	Mode #N/A	Mode #N/A
Standard D 1.09876	Standard D 0.952784	Standard D 1.006237	Standard D 1.011897
Sample Va 1.207273	Sample Va 0.907796	Sample Va 1.012513	Sample Va 1.023936
Kurtosis -0.31892	Kurtosis -0.26996	Kurtosis 0.722071	Kurtosis 0.254814
Skewness 0.381712	Skewness -0.05139	Skewness 0.149183	Skewness 0.4922
Range 4.801632	Range 3.944707	Range 5.114252	Range 4.548292
Minimum -1.89191	Minimum -1.9692	Minimum -2.32085	Minimum -2.30396
Maximum 2.909723	Maximum 1.975503	Maximum 2.793407	Maximum 2.244334
Sum 1.426485	Sum 12.09887	Sum 5.176872	Sum 0.853352
Count 48	Count 48	Count 48	Count 48
Confidence 0.319046	Confidence 0.276659	Confidence 0.292181	Confidence 0.293824

<i>PairC, V1</i>	<i>PairC, V2</i>	<i>PairD, V1</i>	<i>PairD, V2</i>
Mean 0.116748	Mean -0.03693	Mean -0.12866	Mean 0.019805
Standard E 0.147548	Standard E 0.143687	Standard E 0.148233	Standard E 0.113792
Median 0.083812	Median -0.00224	Median -0.21236	Median 0.077359
Mode #N/A	Mode #N/A	Mode #N/A	Mode #N/A
Standard D 1.022242	Standard D 0.995491	Standard D 1.02699	Standard D 0.788373
Sample Va 1.044978	Sample Va 0.991003	Sample Va 1.054709	Sample Va 0.621532
Kurtosis -0.76122	Kurtosis -0.23206	Kurtosis 0.200353	Kurtosis -0.22563
Skewness -0.05751	Skewness -0.14942	Skewness 0.430159	Skewness 0.123458
Range 3.914167	Range 4.746622	Range 4.840904	Range 3.257642
Minimum -1.95249	Minimum -2.38416	Minimum -2.01586	Minimum -1.48422
Maximum 1.961681	Maximum 2.362462	Maximum 2.825042	Maximum 1.773422
Sum 5.603888	Sum -1.77268	Sum -6.17575	Sum 0.950643
Count 48	Count 48	Count 48	Count 48
Confidence 0.296828	Confidence 0.28906	Confidence 0.298207	Confidence 0.228919

<i>PairE, V1</i>	<i>PairE, V2</i>
Mean -0.10218	Mean -0.05258
Standard E 0.144669	Standard E 0.126471
Median -0.04147	Median -0.07049
Mode #N/A	Mode #N/A
Standard D 1.002297	Standard D 0.876214
Sample Va 1.004599	Sample Va 0.767751
Kurtosis 0.441772	Kurtosis 0.366947
Skewness -0.02939	Skewness 0.39663
Range 4.875202	Range 4.111267
Minimum -2.59152	Minimum -1.64423
Maximum 2.283682	Maximum 2.467037
Sum -4.90459	Sum -2.52385
Count 48	Count 48
Confidence 0.291036	Confidence 0.254426

Figure 89

<i>PairA, V1</i>	<i>PairA, V2</i>	<i>PairB, V1</i>	<i>PairB, V2</i>
Mean 0.096989	Mean 0.196302	Mean 0.104324	Mean -0.00952
Standard E 0.13961	Standard E 0.122261	Standard E 0.123087	Standard E 0.134324
Median 0.109633	Median 0.168694	Median 0.103114	Median -0.1503
Mode #N/A	Mode #N/A	Mode #N/A	Mode #N/A
Standard D 1.099287	Standard D 0.962687	Standard D 0.969186	Standard D 1.05767
Sample Va 1.208433	Sample Va 0.926765	Sample Va 0.939322	Sample Va 1.118666
Kurtosis -0.54311	Kurtosis -0.47122	Kurtosis 0.606116	Kurtosis 0.036602
Skewness 0.270592	Skewness -0.00894	Skewness 0.104529	Skewness 0.385504
Range 4.801632	Range 3.944707	Range 5.114252	Range 4.548292
Minimum -1.89191	Minimum -1.9692	Minimum -2.32085	Minimum -2.30396
Maximum 2.909723	Maximum 1.975503	Maximum 2.793407	Maximum 2.244334
Sum 6.013295	Sum 12.17075	Sum 6.46811	Sum -0.59005
Count 62	Count 62	Count 62	Count 62
Confidence 0.279167	Confidence 0.244477	Confidence 0.246127	Confidence 0.268598

<i>PairC, V1</i>	<i>PairC, V2</i>	<i>PairD, V1</i>	<i>PairD, V2</i>
Mean 0.058135	Mean -0.02677	Mean -0.2056	Mean -0.03363
Standard E 0.127375	Standard E 0.124805	Standard E 0.123796	Standard E 0.097062
Median 0.009687	Median -0.03285	Median -0.22023	Median 0.014122
Mode #N/A	Mode #N/A	Mode #N/A	Mode #N/A
Standard D 1.002953	Standard D 0.982716	Standard D 0.974768	Standard D 0.764267
Sample Va 1.005915	Sample Va 0.965731	Sample Va 0.950173	Sample Va 0.584104
Kurtosis -0.62364	Kurtosis 0.254169	Kurtosis 0.386065	Kurtosis -0.19345
Skewness -0.04033	Skewness 0.090306	Skewness 0.468056	Skewness 0.175304
Range 3.965942	Range 4.972036	Range 4.840904	Range 3.261751
Minimum -2.00426	Minimum -2.38416	Minimum -2.01586	Minimum -1.48833
Maximum 1.961681	Maximum 2.587876	Maximum 2.825042	Maximum 1.773422
Sum 3.60437	Sum -1.65981	Sum -12.747	Sum -2.08523
Count 62	Count 62	Count 62	Count 62
Confidence 0.254702	Confidence 0.249563	Confidence 0.247545	Confidence 0.194088

<i>PairE, V1</i>	<i>PairE, V2</i>
Mean -0.09963	Mean -0.03354
Standard E 0.124201	Standard E 0.118063
Median -0.04147	Median 0.033968
Mode #N/A	Mode #N/A
Standard D 0.977963	Standard D 0.929633
Sample Va 0.956411	Sample Va 0.864217
Kurtosis 0.33183	Kurtosis 0.486656
Skewness -0.15939	Skewness -0.14884
Range 4.875202	Range 5.053046
Minimum -2.59152	Minimum -2.58601
Maximum 2.283682	Maximum 2.467037
Sum -6.1771	Sum -2.0793
Count 62	Count 62
Confidence 0.248356	Confidence 0.236083

Figure 90

Numeric Output of Alternate Box-Muller Transformation on Uniform R.V. Sample Sequences											
Standard Normal Random Variable = SQRT(-2*LN(U(la)))*COS(2*PI()*(U(lb)))											
Ui, Ui+1	Ui+1, Ui	Ui, Ui+2	Ui+2,Ui+1	Ui, Ui+3	Ui+1,Ui+4	Ui+3,Ui+5	Ui+2,Ui+4	Ui+2,Ui+1	Ui, Ui+4		
1.118872	-1.58306	-0.3654	-0.69476	-1.6074	-0.17458	-0.1134	-0.63082	-0.60704	-0.19364		
-1.76096	1.095513	-0.65562	-0.38205	1.169318	-0.82681	1.436749	-1.02918	-0.86182	0.460259		
0.819048	-1.70328	0.68948	-0.02854	1.889885	1.961848	-0.84363	0.177595	-2.05044	-1.34441		
0.345205	0.204495	-0.92403	-0.77499	-1.04786	0.013839	0.113221	0.904402	0.019001	-1.14238		
0.478427	-0.13826	-0.31349	-0.53047	2.227761	-1.26497	-0.42605	1.722225	1.101179	-0.63685		
0.290076	-0.04331	-0.92676	0.363487	-0.31316	0.073278	1.69105	2.1972	-0.47974	-0.57526		
-2.43136	1.315783	0.087433	0.838752	-0.91111	-0.13445	-0.85647	-2.59147	1.471324	0.540154		
0.875082	-0.08907	0.928218	-0.26028	0.237685	-0.85193	-0.25699	-1.71653	0.757633	1.255192		
0.34939	2.550201	1.687156	0.738855	0.277506	-1.43518	0.667983	1.259439	-0.81323	1.451371		
0.062034	1.660399	2.094043	0.492712	-0.30331	-0.24448	0.373243	-0.39485	-0.21708	-0.39549		
1.609129	0.175941	-0.04757	0.356863	0.603471	-1.36692	-0.55363	0.062113	-0.33635	-0.10309		
2.434943	-0.32601	-2.02536	0.199063	0.494561	0.289171	-1.51283	-1.49272	0.772804	2.864967		
1.345626	-0.4864	0.260467	0.173989	-0.02524	-0.00521	-0.82696	-1.50974	-0.39952	-1.74264		
0.360793	-1.02509	0.295265	-1.62831	1.807546	0.025406	-1.06672	0.153557	-0.78919	-0.22163		
1.731175	-0.28156	0.275344	0.00738	-0.24168	-0.11767	-0.97916	-0.081	0.163716	-0.71646		
-0.62307	0.313393	1.404233	1.103463	1.624228	-1.65122	0.329543	0.713821	0.768284	-0.70068		
-0.87475	-0.07465	-0.6308	-1.23152	-0.01054	0.30315	-0.50781	0.436578	-0.13265	-0.07591		
-1.38043	0.431863	-0.68004	-2.97004	0.0928	0.772726	0.090119	0.232528	1.198599	0.507581		
-0.87922	0.348821	0.408813	2.001131	-0.16524	0.968065	0.854391	0.087577	-0.50793	0.155113		
-0.99403	0.442878	-1.05106	0.854715	0.706641	-0.63139	0.435125	0.041212	0.411071	0.740369		
-0.86633	1.412089	0.647699	-0.13145	-0.71215	0.179567	-1.55995	-0.92316	0.734627	0.769818		
1.215636	1.473141	0.799973	0.353926	0.873706	0.315574	-1.80975	0.161371	-0.92429	1.631629		
-0.42369	1.695935	0.968575	0.635109	1.888085	-1.08472	-0.5051	-1.40106	-1.63588	-1.00551		

Figure 91

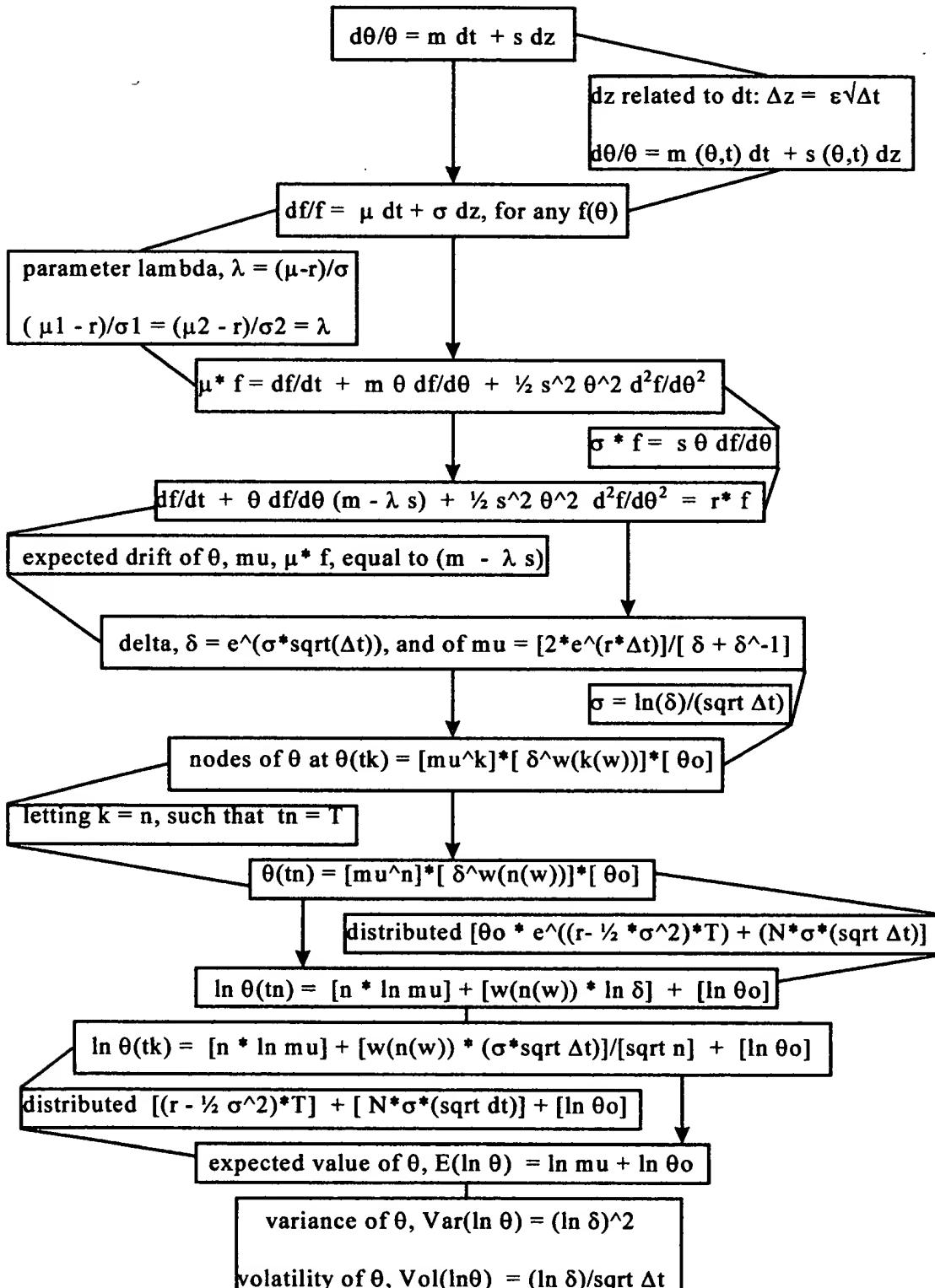


Figure 92

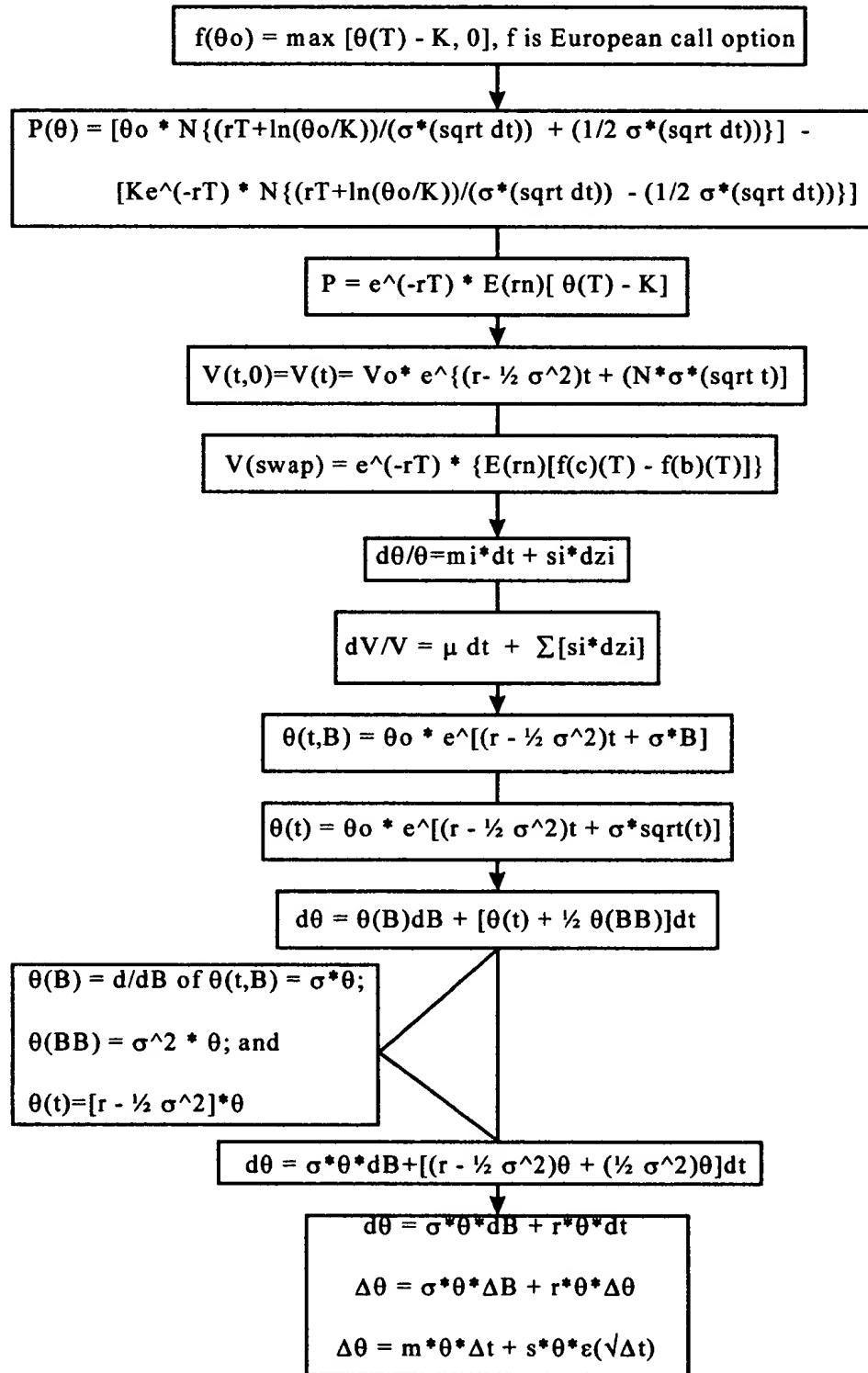


Figure 93

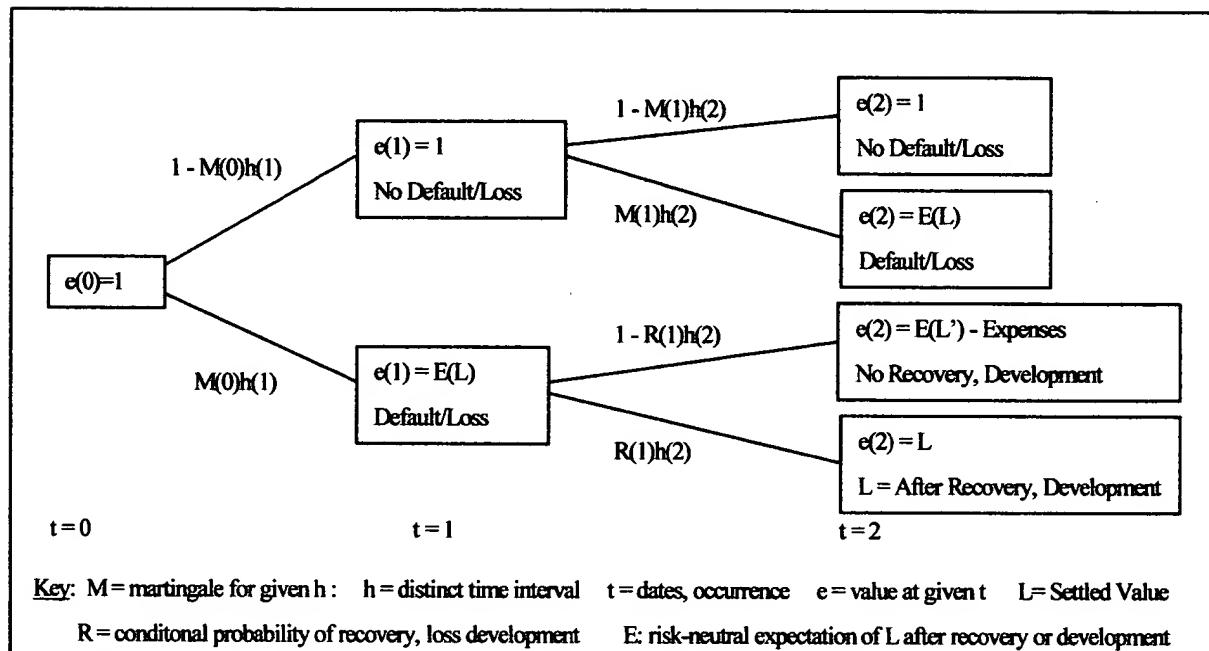


Figure 94

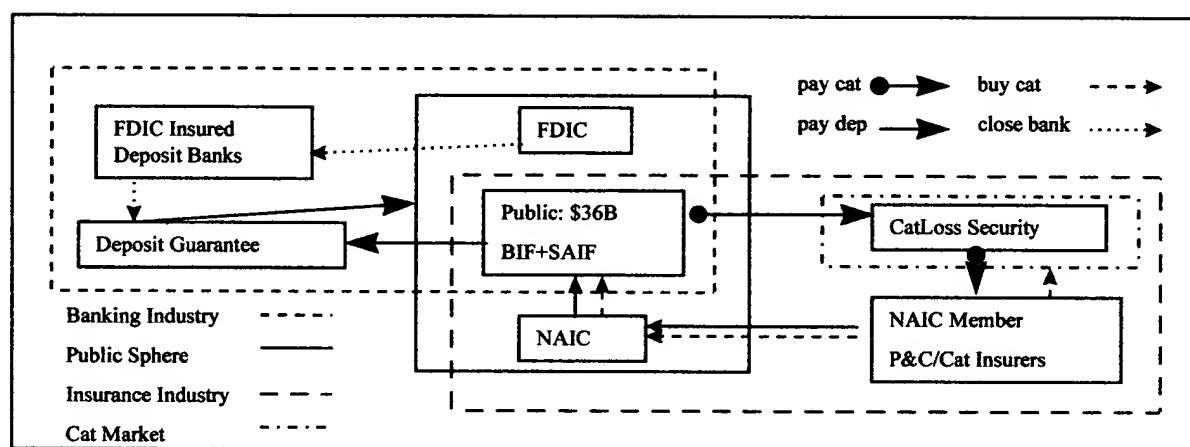


Figure 95

Temporary disable feature on memory and/or graphics, internal or as outside device, for tests

this enables the calculators to be used in test environments without further ado or loss by having temporary disable feature, memory is not deleted, but is non-functional for tests disable memory and/or graphics functions for a time period, so the calculator can be used: an internal disable feature with timed duration, using the processor's clock to count time or by central storage, memory loading, device, with storage space per calculator in group.

Figure 96

Short coded demos in on-board memory of interesting usage, topics, subjects and formulae

it's always fun for an electronic device to have simple programs, showcasing capabilities it's always good for dedicated devices to stimulate interest and learning in their subject the depth of features available in such calculators often remain hidden from casual use: demos on topics, functions and formulas in memory, wherein elaboration in user manual the user manual is organized, conceived and focused on capabilities, usage, applications examples: reference items, formulae, even graphical art generations, sample, "Insect": graph in polar: $r_1 = 5\cos(2\Pi)$; $r_2 = 2+2\cos(2\theta)$; $r_3 = 5-2\tan(5\theta)$; $r_4 = 4+4\sin(2+2\theta)$. add brief elaboration and context to educate, to inform; see also Reference Resources.

Figure 97

Resident resource compendia, RAM/ROM sets, providing coded functions and items on-board

not much on-board memory need be taken up by assorted demos, being fixed-coded items by executing demos on user command, stored graphics, results or images are not required add required list, group or function for the variety of subject expositions ala encyclopedia: target assemblage of reference compendia to varied educational levels of math and science high school version supports teaching of geometry, algebra, probability, calculus, sciences elementary to college versions help educate; scalable to lower end units, and useable in all; make advanced specialized resources per industry, as modules loaded to RAM or installed per electrical, mechanical, environmental, financial engineering; math, physics, astronomy such items include today's methods, theorems, formulae, procedures, pre-coded functions compendia add pivotal resources: references, equations, algorithms, processes, programs.

Figure 98

professional standard industry-specific software, pre-loaded or accessible through interface

develop the reference resources along with subject functions coded to existent calculators arm a portion of calculator memory with compendium of equations, conversions, etc. some to full pre-loading, or as modules by industry fields, with downloading to RAM

Figure 99

value-added software is packaged as desirable assets for different operational specialties

Calculator has application archives, of science, math, engineering, focus on user-friendly proper subject archives arranged, to be categorically supplemented by newly coded items new archives are value-added property to integrate, install, or avail, by cable, line or net all software can be pre-loaded (opt. delete), be availed separately, or transmitted on-line provide additional access and memory capacity, i.e. RAM/ROM cards, ext/int drive/storage technology path of calculator unit on improved digital interfaces, bus, PCMCIA, memory.

Figure 100

<u>Resident Financial Equations and Algorithms coded for use in Equation (iterative) Solver, include:</u>				
AI CorpB	AI TB	Annuity	Bond Equiv Yield	Bin 1, Bin2, Bin 3
Binomial	BS	Bond	BonK, BonV	Brown
CBT	CLT	Comp	Con, Conadj, CondP	Convexity
DeltaP, dP	dPdY	DurMod	DurMc	DV01
FFOTD	Forward	FX	Hedge, HR	MDS
Min1,Min2,Min3	Mortgage	MPC	Muni	OAS3 (example)
OCF	PAY, PAY1	PR, PRBond	PRCalB, PRMunat	PRO
PROMOD	PROPC	PTIC	PV	SPC
Spot	Swap	FXSwap	Tbill1, TB2,	TBT
TDCap	V	Var	W	BoxMuller

<u>Resident Financial Reference Resource Items coded for display to screen or output, include:</u>				
Bernoulli	optionbond	Borel-Cantelli	Boundary	Brownian
Option	optionlog	CAPM	Chebychev	Correlation
CoVar	Credit	cut-off	distfunc	E(N)
EQU	EX	Floater	FOCF	GenFunc
GcS	lattice	Inde	Intre	Ito
Lambda	lease	martingale	minrisk	mpr
partition	PCP	Poisson	Portf	RandomW
replication	riskadverse	SPC	strong	theorful
tokens	tree	utility	weak	weight

<u>Other Reference Resource Sources for Financial Matter, Data, Equations and References, include:</u>				
Books	Periodicals	Newspapers	Internet	Real-time digitized data providers

Resident Processing, Reference Resource Items and Programmed Functions, include:

clock, date, calendar, default value present time/date
 equation solver function and simultaneous equation solver function
 intervals between dates, coupons, valuation, exercise, expiration
 day-count conventions, instrument standards, conversions
 fixed-income general valuations (annuity, mortgage, lease, bond, rates and yields)
 fixed-income advanced valuations (variable cash-flows, inverse, MBS, sinking, optionality)
 fixed-income derivative valuations (options, futures basis, hedge ratios, swaps, FX dP/dY)
 fixed-income and derivative sensitivities (duration, convexity, delta, gamma, theta, dtheta)
 fixed-income yield curve building (spot, risk-free short rates and forward curves)
 accounting standards, (GAAP, statutory, derivatives, credit quality, risk-adjusted capital)
 financial statement and performance ratios, operating ratios of financial criterion
 credit and ratings grade conventions, calculating ratings and spread approximations
 insurance ratios, pricing, quantitative methods
 reinsurance forms and pricing of excess of loss, facultative, treaty varieties
 actuarial mathematics and sciences, loss distributions, contingencies, survival models
 standard normal and lognormal random number generation, selectable N, descriptive statistics of sample
 simulations by lattice, brownian motion, random sequence generation, interpolation
 portfolio management of VaR, performance analytic measures
 direct approximations by derivation, linear algebra, symbolic, integration, interpolation
 mapping to charts, display multiple list and graphical display (to 3D)
 one, two and more variable statistics and multi-factor regression
 time series and artificial intelligence data mining, normalization procedures
 inferential and descriptive statistics, probability distributions
 real-time and formatted data loading and serial, IRDA and TCP/IP
 stored column formulas, spreadsheet capability, data set manipulation
 split screen, display size minimum pixels 128x64, 8x21 display characters
 trace, overlay (or by split screen) and combine scatter plots, histograms, interpolations, results.